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BADGER ON INVESTMENT PRINCIPLES AND PRACTICES

BY

RALPH EASTMAN BADGER, PH.D.

PROFESSOR OF ECONOMICS, BROWN UNIVERSITY

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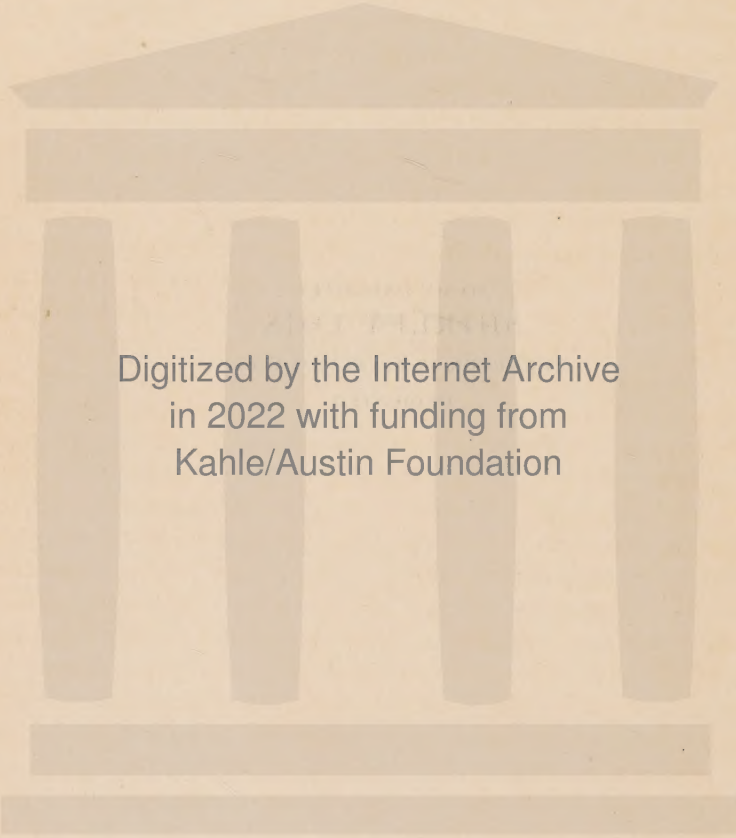
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TO MY DAUGHTER
SHIRLEY LOIS
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PREFACE

Within the past twenty-five years the science of investment has assumed aspects of complexity in proportion to its increasing importance. The extension of the corporate form as a means of conducting enterprises has greatly facilitated the investment process, while the phenomenal increase in our national wealth has resulted in giving large numbers of our population capital for investment purposes. It is but natural, therefore, that a field, hitherto explored for the most part by bankers, investment officers of insurance companies, and a relatively few wealthy individuals, should now become a matter of lively interest to a much larger group of individuals, constituting the so-called middle class.

This situation has a twofold interest for the student of economics. There is, of course, the strictly vocational aspect of the science. A thorough understanding of the principles of investment is indeed of the utmost importance to the man who anticipates entering the banking field, as a commercial or an investment banker. The same may be said of the man who expects to engage in the selling of securities. Many lawyers, especially those who engage in the work of administering estates or who act as trustees, must also be thoroughly familiar with the subject. On the other hand, nearly everyone hopes, at least, to accumulate some capital during his life and quite naturally desires to employ this in a way that will bring him the maximum return consistent with a minimum risk. This desire can be accomplished only by a reasonable familiarity with the principles of investment.

Quite apart from the vocational aspects of the subject, however, one finds that it has a social significance as well. Material progress depends upon a growing fund of capital goods. Capital goods, in turn, require the double process of saving and investing. From a social standpoint, saving is meritorious; yet no benefit accrues from the saving process until direction has been given to that which is saved. It is this last process

that we call investment. It is quite impossible in any one work to cover exhaustively the entire field of investment. There are so many ramifications to the subject that no one man can ever say that he has thoroughly mastered them all. One man may be fairly well versed in industrial securities; another, in public utility securities; another, in securities of railroads; and still another, in municipals. To combine a thorough knowledge of all fields, however, is humanly impossible. So it is with the preparation of a book of this nature. It is possible to cover only in a rather broad way the more important aspects of the entire field, and to develop those fundamental principles of the science which may be applied later in the process of specialization. This is the aim of the present work.

The arrangement to be followed provides for a division of the subject into four major parts. Part I we shall call Introduction. Here will be considered some of the more general aspects of the problem, such as its historical development, factors bearing on the demand for, and supply of, loanable funds, the return on invested capital, and the question of investment policies. Part II will be devoted entirely to the contract aspects of various kinds of investments. After a brief consideration of bases for classifying securities, consideration will be given to the contractual features attached to different types of secured and unsecured bonds, as well as to special types of bonds. The same treatment will be accorded preferred and common stocks. A constant effort will be made in this section to point out the relative desirability, from the investor's standpoint, of the more common provisions found in different types of securities, as well as to show clearly the investment characteristics of each major group. In Part III we shall consider the entire question of financial analysis. Various methods will be set up for analyzing and comparing the financial status of important groups of companies. Consideration will be given to industrial companies, public utilities, railroads; to the securities of financial institutions, such as insurance companies, banks, and investment trusts; to real estate investments and government and foreign securities. It will be observed that a sharp distinction has been made between analysis of the contractual features and analysis of the financial status of investments. Important as each kind of analysis is to the investment problem, they differ fundamentally in theory and hence

are treated separately. Some acquaintance with the fundamentals of accounting is desirable in connection with financial analyses, although an effort has been made in the following discussion to cover enough of the accounting principles involved to enable the student with little or no training in accounting to grasp the points herein treated. In Part IV are considered the mechanics of investment. The routine and procedure followed in the purchase and sale of securities, as well as the mathematics ordinarily required to compute bond and stock yields and interest rates, are described. The more important services available to the investor are likewise described. Taxation in its relation to the investment problem is considered in another chapter. The final chapters are devoted to a consideration of the relationship between the business cycle and fluctuations in investment values.

When treating a field so broad in scope as the present, it is a perplexing problem to decide the limits that should be set in respect to subject matter. For the student or reader who wishes to specialize in the field of investments, a complete treatment is desirable. Where the book is to be used as a text for a single semester course, on the other hand, it is suggested that the following chapters be omitted: Chapter XV, dealing with the regulation and economics of public utilities; Chapters XX and XXI, dealing with the securities of banks, insurance companies, and investment trusts; and Chapter XXIX, dealing with taxation and investments.

The basis for exclusion here is the somewhat specialized character of the material in these chapters. However, the teacher conducting the course may have good reasons for making a different selection. Thus, where the class has already studied corporation finance, it might be possible to omit a substantial portion of Part II. In any event, an effort has been made to treat various topics as integrals, for the purpose of assisting the teacher or student in arranging the amount of reading best adapted to his own circumstances.

Throughout the entire book, an effort has been made to combine the theoretical point of view with the practical. In the treatment of a subject of this kind, there is the danger of leaning too far in one direction or the other. The author's experience in the field has at least brought him in touch with both of these points of view. For five years he has been in

charge of the courses in corporation finance and investments at Brown University. During the past six years he has acted as consultant in a number of tax cases in which he has been called upon to value a rather wide range of industrial securities for inheritance and income tax purposes. For a year and a half he was in charge of the statistical department of Bodell & Company, Investment Bankers. At the present time he has supervision of the investments of certain large estates in Rhode Island. It may rightly be inferred, therefore, that the present book represents an effort to combine the more important principles, both practical and theoretical, evolved in the author's mind as the result of these experiences in the field. The arrangement followed in developing the material is essentially that used in the courses the author conducts at Brown University.

The author desires to express his deep appreciation for the suggestions made by Professor James P. Adams of Brown University in respect to the arrangement and material in the chapters on public utilities. Dr. Lucy W. Killough deserves much credit for her painstaking work in editing the entire manuscript and checking the statistical material, and in the preparation of charts. To Mrs. Agnes G. Badger appreciation is due for careful attention to the detail work in preparing the manuscript.

RALPH E. BADGER

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PART I

CAPITAL AND INVESTMENT POLICY

CHAPTER I

INTRODUCTION

Stages in economic development.—Economists sometimes classify the various stages in the development of human society according to the characteristic methods of acquiring a livelihood. The four periods customarily appearing in such a classification are as follows: the hunting and fishing stage; the agricultural stage; the handicraft stage; and, finally, the industrial, or capitalistic, stage. Capital, in the economic sense, has been employed by man since he first fashioned crude hunting implements. Not until the latter part of the eighteenth century, however, can it be said that capital has played a dominant part in our economic structure. Even as late as the handicraft period, such capital as was employed was mostly in the form of tools used by men who produced largely by hand. Under this system, minute division of labor, as we now know it, was nonexistent. The worker was largely responsible for the entire product, and no considerable amount of investment was necessary to enter production. Individual skill and craftsmanship were at a premium, while standardization and quantity production were unknown.

Late in the eighteenth century, a distinct change in production methods occurred. The economic revolution which occurred in England between 1770 and 1800 was occasioned by a series of inventions in the textile industry and the perfection of the steam engine. The opening of new territories, improved methods of transportation, and the widening of markets that quickly followed added impetus to the movement, with the result that, at the beginning of the nineteenth century, the old methods of hand production were obsolete. Ownership of factories and machines gradually came into the hands of capitalists, and, consequently, the workers no longer owned the tools of production.

The chief characteristic of this new system is the manner in which labor is utilized. Instead of proceeding immediately

to the manufacture of an article, say, shoes, labor is first employed in the erection of a factory and machinery. Later, more labor is employed directly in the manufacture of shoes; but not for some time—perhaps several years after the initial steps were taken. The results of machine production are division of labor, specialization, and greatly increased production. In fact, the further this development is carried, the more specialized the equipment, and the greater the output.

The *sine qua non* of this system of production, however, is the existence of a fund of capital. There must be a class of persons who are in a position to divert a part of their current income to the production of factories, railroads, machines, raw materials, and other goods,¹ which, of themselves, are unable to satisfy the wants of final consumers, but which are used for purposes of further production. This class of goods the economist calls capital in contradistinction to goods or services which are destined for immediate consumption, and it is important for us to recognize and to maintain this distinction. In economics the term "capital" is used to denote factories, goods, or services which, of themselves, are not available in final form.

Material prosperity and capital accumulation.—Enough has been said to indicate that the prosperity of a nation to-day depends, in large measure, on the existence of a growing fund of capital goods. The United States, England, Germany, Belgium, and France are certainly among the richest nations of the world from the standpoint of capital, and at the same time they are among the best supplied with material wealth. Countries like Russia and China, as well as some of the southeastern European nations, have relatively little capital at their command. Agriculture is carried on with primitive tools; and manufacturing, in many instances, is conducted under the handicraft system, with the result that the productive power of labor is very low. There is, of course, a close correlation between

¹ There is a general distinction in economic theory between producers' goods, or capital, and consumers' goods. See Taussig, Frank W., "Principles of Economics" (3d ed.), Vol. I, p. 69, Macmillan Co., New York. While adherence to this distinction is not unanimous (see Fisher, Irving, "Elementary Principles of Economics," p. 38, 1913, Macmillan Co., New York), it will be maintained throughout this book. In general "capital" will be used to designate those goods or services used for purposes of further production, as distinct from goods used for consumption purposes. See Carver, Thomas N., "Distribution of Wealth," p. 125 ff., 1904, Macmillan Co., New York; Clark, John Bates, "The Distribution of Wealth," Chapter IX, 1924, Macmillan Co., New York.

the productive power of the laborers of a country, their real wages, and the standards of living. A partial explanation of the economic well-being of a nation is found, therefore, in the relative amount of capital at its command.

The use of indirect methods of production, a high degree of specialization in industries, the use of specialized machines, the development of adequate means of transportation and communication—all require capital. Capital, on the other hand, requires a saving from current income. That is, the creation of capital goods requires willingness and ability on the part of some people in the community to forego the immediate consumption of a part of their current income and its diversion to the production of machinery, factories, railroads, and other kinds of producers' goods.

Unquestionably the saving process depends on two things: (1) willingness, and (2) ability. Thus, while two nations may have similar or equal national incomes, one may practice greater thrift than the other and thereby create a larger fund of capital. On the other hand, the extent to which an individual or a nation can save will depend on the amount of its income, since there is a minimum of income necessary to existence, out of which any saving is impossible. It might be argued that we are reasoning in a circle when we state that saving depends on the amount of a nation's income, and this income, in turn, depends on the amount of capital it has at its command. A moment's reflection, however, will show that the amount of capital a nation has is only one of the factors contributing to the amount of its income. Other factors are the existence of natural resources, the skill and organizing ability of its people, its climate, its geographical situation, the fertility of its soil, and so on.

It is, of course, far beyond the scope of this book to analyze the underlying causes for national success or failure. These are partly economic, partly psychological. Despite the wide range of influences which have a direct bearing on national prosperity, however, we are entitled to assume, for our present purposes, that the act of saving, which is the first step in the investment process, is one of vital importance to the individual as well as to the nation.²

² An effort should be made to appreciate the significance of saving from a fundamental point of view. We are accustomed, in everyday thought, to con-

Investing closely allied to saving.—Closely allied to the act of saving is that of investing. The mere setting aside, or the accumulation, of present goods, or money—the customary term now in use when we speak of wealth—is only one half of the entire investment process. It is necessary that direction be given to the employment of wealth that has been saved. The parable of the five sons contains a wholesome lesson for us even to-day. The son who buried his talent made no contribution to the progress of the world. Likewise, the man who hoards his gold has saved, but his act of saving has not benefited society. The completed process involves, first, saving, or foregoing present consumption; secondly, the act of using that which has been saved in the creation of producers' goods. This may be done in several ways. The saver may himself acquire capital goods; he may intrust his savings to some one who, individually or through partnership, conducts some form of business enterprise; he may turn his funds over to a corporation in return for its stocks or bonds; or he may simply commit that which he saves to a bank or an insurance company, or to some other form of financial institution, which, in turn, will proceed to employ it for him. This second part of the transaction we call investing. Investing, therefore, may be defined as the act of intelligently determining the uses to which capital shall be put.

Whereas the importance of a growing fund of capital to the well-being of a nation is universally recognized, the direction or employment of this fund to the best advantage of society is no less important. The mere act of saving, commendable in itself, is of no benefit to the community, unless proper employment is made of that which is saved. The erection of a plant to manufacture a perpetual motion machine is a mere waste of resources. Likewise the attempted development of a mine in a territory where the ore content is too low to be of any real value represents an economic loss. Capital intrusted to a corporation that is operated by unscrupulous promoters merely for the purpose of selling securities is like-

sider saving merely in the light of laying aside money, by putting it in the bank, or otherwise investing it. This act has a wider significance. By it we forego immediate consumption and divert labor and resources to the production of capital goods.

wise lost from a social standpoint. One of the sad stories of our present-day life centers around the hundreds of millions of dollars that are lost annually in fake oil wells and other dishonestly promoted schemes by the uninformed, who commit their hard-earned savings to such enterprises in the hope of receiving alluring profits that never come. But far worse than this in terms of social loss is the number of failures of legitimate businesses. Thus, in the United States, in 1926, 21,773 concerns, out of a total of 2,158,457, failed, with liabilities aggregating \$409,232,000.³ The latter losses result not from dishonesty but from incompetence and inability on the part of entrepreneurs who have been unable properly to manage either their own funds or those intrusted to them by others, or from the attempted development of enterprises for which there was no real economic need.

The science of investment.—Looked at from a broad standpoint, the science of investment deals with the employment of capital. The individual is rewarded for his success or penalized for his failure in the investing of his private funds by the pecuniary return or loss he suffers. As we have suggested, however, there is a social as well as an individual aspect to the problem. Resources and labor committed to enterprises which cannot profitably fill some economic need are wasted and society as a whole loses. The same situation may be said to exist where loanable funds are placed in the hands of those who are unable properly to manage undertakings. Here the same result is met: loss to the individual investor, and an economic waste of society's resources.

Thus are brought to light two of the most fundamental principles of investment: the enterprise sponsored should fill a definite economic need in a manner capable of yielding a profit; and the management of the enterprise to which funds are intrusted should be both efficient and honest.

These two cardinal principles, important as they are, can rarely, if ever, be measured statistically, as can many other factors in the problem. This word of caution is given early in an effort to make clear the fact that, regardless of the conclusions which may be deduced from elaborate financial

³ "U. S. Statistical Abstract," 1926, p. 309.

analyses, much depends, after all, on the nature of the enterprise and the character of its management. Both of these factors will be reiterated in subsequent pages, with examples here and there further to illustrate their vital significance to the investment problem.

The social importance of studying the science of investment, as we see, arises from the necessity of properly employing the surplus funds—the capital—of society. It is true that, throughout this discussion, emphasis will be placed on the individual's problem; yet, that which proves profitable for the individual generally proves advantageous to the community. Our competitive economic organization has a very consistent record of rewarding those who serve it best, and of penalizing those who, however good their intentions, fail to contribute in an economic way to its varying needs. While we shall neglect further to emphasize the broad social aspects of the problem in later pages, it will not be because they lack importance. Concrete development requires us to consider the entire subject largely from an individualistic point of view. But, in so doing, we do not for a moment admit that our study is entirely devoted to profit-making formulas. The entire subject of investment is closely tied up with the economic welfare of society.

Historical development of the investment problem; early forms of investment.—It is only within comparatively recent years that the subject of investment science has commanded any very widespread interest. When simple methods of production prevailed, and when the various factors of production were generally assembled under one person, there was little opportunity for investment in the modern sense. This does not imply that some aspects of the problem as it exists to-day were not then present.

The development of large undertakings by means of division into shares, for instance, may be traced back to the formation of associations in Rome for the farming of taxes. Under this arrangement the tax farmers (or collectors) associated with themselves capitalists, who advanced funds for the purchase of rights to collect taxes and shared in the profits of these operations, although they themselves had no share in managing the enterprises. The shares of these associations were quoted and were subject to considerable speculation until

Augustus reorganized the entire system of taxation in the Roman Empire.⁴

Public loans of Italian cities.—More closely akin to our modern dealings in transferable securities, however, was the issuance of public loans by the Italian cities of Venice, Genoa, and Florence, in the Middle Ages. As early as the twelfth century the Bank of Venice was formed to act as transfer office for the national debt. Dealings in the French debt also date back to the Middle Ages, and by the sixteenth century we find speculation in City of Paris bonds promoted by chicanery on the part of the nobles and the king, who probably kept his favorites informed as to the state of the public treasury.

Development of bourses.—Accompanying these dealings in state debts was the development of bourses of commerce on the continent, or of public places, where merchants, bankers, brokers, and others met to deal in bills of exchange, large enterprises, insurance, loans, and similar matters.⁵ Early impetus was given to speculative trading on these various bourses by the formation of the Levant Company in 1581 and the Dutch East India Company, chartered in 1602. The shares of the latter company were transferable to bearer, if desired in that form, and were actively traded in on the Amsterdam Bourse. While the French East India and West Indies companies were established during the latter part of the seventeenth century, the shares of these companies were subscribed to largely by the king and his associates and did not appear to any great extent on the exchanges. Shares in the Bank of England, however, were actively traded in during the last decade of the seventeenth century. It is significant that the early use of the joint stock principle in England was rarely applied to manufacturing enterprises. At the opening of the eighteenth century Adam Smith observed that "the funded debt, the Bank of England, and the East India Company were the only examples of really large and safe investments."

Speculative and investment transactions in negotiable securi-

⁴ Jannet, Claudio, "Le Spéculation, et la Finance au XIX^e Siècle," Paris, E. Plon, Nourrit et Cie, 1892, p. 337.

⁵ Martin, Germain, "La Grande Industrie en France sous le Règne de Louis XV," Paris, A. Fontemoing, 1900 (in Bibliothèque de la Société des Etudes Historiques).

ties developed most rapidly in England, after the opening of the eighteenth century, although the speculative outbursts occasioned by John Law's schemes for readjusting the national debt of France and the Mississippi bubble indicate that trading was by no means absent in France.

During the nineteenth century we find trading in securities carried on in a regular and orderly way on the London Stock Exchange, the Paris Bourse, and the New York Stock Exchange, which was officially organized as early as 1817. Early dealings in this country were chiefly in the national debt, which, in 1816, amounted to \$108,510,000.⁶ There is, however, a record of trading as early as 1801 in bank and insurance shares.⁷

Development of corporations and the investment problem.—The rapid industrial expansion which took place throughout the world during the nineteenth century was naturally accompanied by a corresponding development in methods of finance. The perfection of the corporate form of organization in this country and of the joint stock company in England has been one of the greatest factors in encouraging investment in the modern sense, and has greatly facilitated business undertakings

⁶ Conant, Chas. A., "The Evolution of Negotiable Securities," *Bankers Magazine*, Vol. 70, p. 29.

⁷ Pratt, Sereno S., "Work of Wall Street," p. 6, 1919, D. Appleton & Co., New York. An advertisement which appeared in the first issue of the *Evening Post*, Nov. 16, 1801, contains the following list of offerings:

PRICES OF STOCKS

	<i>Per Cent</i>
6 Per Cent Funded Debt	98¾
3 Per Cent Funded Debt	56½ @ 57
8 Per Cent Loan	112½
6 Per Cent Navy Loan	par

BANK STOCKS

	<i>Per Cent</i>
United States Bank	143 @ 143½
New York (dividend off)	131½
Manhattan	132

INSURANCE SHARES

	<i>Per Cent</i>
New York Insurance Co.	128
Columbian Insurance Co.	137 @ 138
United Insurance Co.	118 @ 119

on a large scale. In fact the corporation is to-day by far the most important type of business organization. While it is true that 47.6 per cent of all manufacturing businesses reporting to the United States Census Bureau in 1919 were partnerships or individually operated, they produced less than 6 per cent of the total value of manufactured products. In the public utility, railroad, and banking fields by far the greater number of enterprises are conducted as corporations. The reasons for the extensive growth in the corporate form of organization lie in its superiority over other forms of coöperative business undertaking. The corporation is perpetual in life, unless terminated for cause, or unless its life is limited by the terms of its franchise; limited liability is enjoyed by the shareholders, except in the case of banks, in which case double liability goes with ownership of the stock; opportunities are offered for specialization among owners and creditors in respect to risks and participation in profits; and investment is facilitated by means of divisible and transferable shares. It is no exaggeration to state that our great industrial and financial development would have been impossible without some form of business organization offering the same advantages as the corporation.

The first private enterprises to be promoted as corporations in the United States on an extensive scale were the railroads. Likewise, public interest in private enterprises centered, at first, largely around the securities of our railroads. The stock of the Mohawk & Hudson was the first railroad stock to be listed on the New York Stock Exchange.⁸ This took place in 1831. Thereafter, railroad securities rapidly assumed an important rôle in American finance and really dominated the investment market of this country until the opening of the present century. The favoritism shown rail securities was prompted, no doubt, by the public character of the railroad business and its importance in the minds of investors.

Recent tendencies in the investment field.—During the last quarter of the nineteenth century an increasing interest was shown in industrial securities, but not to the exclusion of railroad securities. The railroads, during this period, were constantly improving their financial status through the consolida-

⁸ Pratt, Sereno S., "Work of Wall Street," p. 10, 1919, D. Appleton & Co., New York.

tion of small roads into great systems, thus eliminating competition and stabilizing earnings.⁹ Whereas, the development of industrial companies was rapid at this time, it is nevertheless true that they suffered from cutthroat competition and consequent instability of earnings. It was not until the era of industrial consolidation, which came after the opening of the twentieth century, that industrials were looked upon with favor, and even to-day they are considered the least stable of all the major groups of enterprises.

Except for a few gas and water companies, the public utility industry, prior to 1890, was to all intents and purposes unknown. At least it may be said that it did not exist as we now know it. After 1890 a rapid development in the use of electric traction took place, and at the opening of the present century the electric light and power industry really started on its remarkable career. Other public utilities, such as the telephone and the telegraph, have likewise enjoyed a rapid extension during the present century, while the gas industry has also shown a healthy growth.

Present scope of the science.—The rapid commercial and industrial expansion which has occurred in this country during the past fifty years, accompanied by an increasingly complex financial structure, has focused attention more and more on the science of investment. Some idea of the growing importance of this science may be gained by considering recent estimates of the amount of securities outstanding in the United States alone. It has been estimated that the total value of physical property in this country in 1904 was \$107,104,000,000,¹⁰ while the visible outstanding securities for that year, exclusive of intercorporate holdings, was \$24,393,932,683, with a market value of \$35,460,605,877.¹¹

In 1926, the value of securities outstanding has been estimated at about \$153,000,000,000, made up as follows: industrial and miscellaneous, \$51,000,000,000; railroads and public utilities, \$41,000,000,000; government, state, and munic-

⁹ An excellent short account of the more important consolidations may be found in Jones, Eliot, "Principles of Railway Transportation," Chapter XVII, 1924, Macmillan Co., New York.

¹⁰ "U. S. Statistical Abstract," 1926, p. 283.

¹¹ Conant, C. A., "World's Wealth and Negotiable Securities," *Atlantic Monthly*, Vol. 101, No. 1, pp. 97-104.

ipal, \$31,000,000,000;¹² and real estate and farm mortgages, \$30,000,000,000.¹³ The total wealth of the country was estimated, in 1922, as \$353,000,000,000.¹⁴ Although it appears that a larger proportion of the community's wealth was represented by securities in 1922 than in 1905, this conclusion is not fully warranted in view of the possible error in estimating the amount of outstanding securities. Nevertheless, the total par value of securities outstanding at the beginning of the present decade had reached an impressive total.

Complex nature of the problem.—During the past several years the annual flotation of new securities has ranged between four and five billions of dollars, including government as well as corporate issues.¹⁵ The proceeds of these new issues were used, in part, to retire or refund outstanding obligations; and, in part, to develop new projects or additions to old ones. These figures, while giving some idea of the magnitude of current financial operations, fail to convey any adequate idea of the complexities that surround the problem of investment. With the development and refinement of the corporation as a form of business organization, there has been a constant tendency to increase the number of different types of securities offered for sale to the investing public. While certain broad classes of securities whose character has been but little changed still remain, there is, nevertheless, a constant effort to introduce new safeguards and to vary investment risk and participation in profits to fit the needs of the individual purchaser. On the other hand, promoters and investment bankers are frequently desirous of securing capital without giving full control of the corporation to outside stockholders. These con-

¹² Moody's "Investors' Service," "Industrials," 1927, p. xliii.

¹³ For latest available estimates, see pp. 47, 48, and 49.

¹⁴ "National Wealth and Income," Federal Trade Commission, 1926, p. 2.

¹⁵ "U. S. Statistical Abstract," 1926, p. 305. Total capital issues, including corporate, foreign government, farm loan, and municipal, 1920 and 1926, were as follows:

<i>Year</i>	<i>New Issues</i>
1920	\$4,010,000,000
1921	4,203,800,000
1922	5,235,900,000
1923	4,989,700,000
1924	6,352,500,000
1925	7,126,000,000
1926	7,396,600,000

flicting motives have produced a veritable maze of different types and classes of stocks and bonds, running all the way from a simple first mortgage bond of an operating company to a convertible bond, with attached warrants, of a holding company. The same variation in the basic investment contract is likewise found in stock issues. Preferred stocks may be surrounded by none or by a dozen different safeguards, and common stocks are no longer simply evidences of ownership as in the past. The recent use of nonvoting, Class A common stocks has introduced a new instrument of finance, the effects of which we are yet unable to appraise.

At the same time, new forms of enterprise have been developed to such an extent that it is no longer possible to construct a classification of enterprises according to their nature. The customary grouping of securities into government, municipal, railroads, public utilities, and industrials is no longer sufficient. The truth of this is illustrated by two simple examples. Under public utilities we must provide subdivisions for the securities of electric power and lighting companies, and of gas, electric railway, and water companies. Yet, electric power and lighting companies may operate either with steam or water power, and the modern public utility holding company may be made up of operating companies which come under all four of the previous classifications. The term "industrial companies" is likewise too broad to be of real value. Under this head, for example, must be classed such diverse enterprises as copper mining, the manufacture of electrical equipment, fruit growing, radio manufacturing, railroad equipment companies, and so forth. In other words, a classification of types of securities, or of enterprises, in order to be of real value to-day, must be extremely detailed, so much so in fact that it is liable to become cumbersome.

Need for scientific study: Investment versus Gambling.—Whereas the task of mastering the subject of investment to-day is far more difficult than formerly, in that it is vastly more complex, it is none the less interesting. It is likewise true that the field now offers as great or greater rewards for those who really devote serious study to its many ramifications. There are some successful investors who, by devoting constant attention to their commitments, are able to earn from 15 to 25 per cent year in and year out on their funds. Such investors, how-

ever, employ a portion of their funds in common stocks or convertible bonds. This can be done, however, only by an exhaustive study of market factors and securities and does not result from a mere reading of various financial services, or by following random "tips." The author has had occasion, during the past five years, in connection with a variety of work that he has done, to follow closely a wide range of financial literature, including many of the current services and current brokers' opinions. Some have real merit, in that they actually analyze the securities on which they offer advice. Most of them, however, are worthless, in that they are inspired by a desire to promote the sale of a particular security, or are backed up by the most casual study of the facts involved or represent mere street gossip. The man who indiscriminately follows this literature, the suggestions of brokers' clerks, or even the suggestions of the average broker, and who buys stocks without any real knowledge of the financial status and earning power of the issuing corporation, is nothing more than a gambler. Such a person, in the end, will do far better with his funds if he relies on the advice of a reputable investment banking house and purchases only high grade bonds and possibly a few of the highest grade preferred stocks, even though his maximum return may be limited to 5 or 6 per cent.

Whereas the difference between gambling and investing is clear, the difference between speculating and investing is less obvious. It is true that such a distinction is sometimes made, although not fully warranted in the mind of the author. The act of speculating is frequently defined as the purchase of high risk securities, securities in newly organized companies, or those with a large investment risk. Where the purchase of such securities is made with full knowledge of the risks present it is investing as already defined. That is, intelligent direction is given to the employment of capital. The risk that the investor is willing to take is a personal matter, pure and simple. Naturally, where the risk is high the promise of reward must be correspondingly large to attract capital. Yet, fundamentally, the commitment of funds to an untried enterprise does not differ from investment, as it is called, in an old and established business. In both cases an effort is made to increase the productive machinery of society. The important distinction is whether the act is safeguarded by a proper study

of the entire proposition before the commitment is made. Such analysis, indeed, may be made either by a conservative investment banking house or by the investor himself. The important matter is that it should be made. The science of investment, in fact, centers around the proper methods to be pursued in making just such studies.

CHAPTER II

THE SUPPLY OF CAPITAL

The subject of investment is closely related in many of its important aspects to economic theory. Consider, for example, the close relationship between the science of investing, interest rates, and the supply of, and demand for, capital. Here we find ourselves at once grappling with one of the most important and difficult problems of the entire subject of economics, for, even though the problem of interest belongs essentially to the field of pure economics, its importance to the theory and practice of investment precludes our passing over it lightly.

We know from a study of economics that interest is the price paid for capital. In a broad way the rate of interest is governed by the supply of, and demand for, capital. This statement is true, despite the fact that short time interest rates, in practice, are governed by the state of bank credit and current business conditions, and vary with little or no reference to the more fundamental factors just mentioned. Contrasted with current or short time changes in interest rates, however, are so-called secular movements, which take place slowly and which extend over a much longer period.¹ In the present section of our work we shall confine our discussion to these broad movements and some of the basic causes therefor.² Why is it that the current rate of interest at times rises to a level as high as 8 or 9 per cent, while at other times premier securities sell to yield as low as 3 or 3½ per cent? Why is it that the current rate of interest varies widely in different parts of the world at the same time? The answers to questions of this nature can be found, in part, through an analysis of the factors governing the supply of, and demand for,

¹ See Chapter IV for a discussion of interest rates during the past 75 years.

² For a discussion of short time fluctuations in interest rates and their relation to the investment problem see Chapters XXX, XXXI, and XXXIII.

capital. Because of the importance of this general and somewhat theoretical subject to the student of investments we shall devote some time to it. Our first interest will center on the supply of capital; thereafter, we shall consider the demand for capital; and in a subsequent chapter we shall study the history of interest rates under the heading, "Return on Invested Capital."

Capital originates from savings.—The creation of producers' goods, or capital, is the result of saving. A nation which consumes its entire income can never increase its supply of capital, except by borrowing that which someone else has saved. The same applies, of course, to the individual. Capital can originate only when people have the ability and desire to divert a part of their current income to the acquisition of producers' goods as opposed to consumers' goods. Whereas it is true that capital, in its broadest sense, originates only in this way, we shall see, however, that temporary or floating capital may be created through the development of an adequate banking system. It is true also that this supply of temporary or floating capital so created may have marked effects on interest rates for short periods.³ An explanation of the more basic movements in interest rates, however, will be found only in changed relationships in the capital market. If we accept the current economic theory of interest—that it represents a point of equilibrium between supply and demand that measures the marginal productivity of capital, on the one hand, and the inertia to be overcome in saving the marginal unit, on the other hand—then any change in economic relations which makes saving more or less difficult, or which increases or decreases the productivity of capital, will be reflected in the rate of interest.

National income and savings.—Perhaps the most important of the various factors governing the supply of capital is the relative size of the national income. The process of saving cannot be carried on unless there is a surplus of current income over and above current needs. Conversely, the larger this surplus, the more it is possible to save. The reason for this is at once apparent. There is for the individual, as well as for the nation, an irreducible minimum of income necessary for existence. This point to-day has only an academic interest,

³ See Chapters XXX, XXXI, and XXXII.

however, for all the civilized nations are accustomed to a standard of living far above the so-called level of existence. Assuming, therefore, that an individual, or a nation, has sufficient income to enable it to maintain its accustomed standard of living, we are right in stating that all excess income could be saved, that is, converted into producers' goods, such as factories, railroads, and so on, if the saving motive was sufficiently stimulated. This, however, is different from saying that all income above that necessary to maintain a given standard of living will be saved; for the extent to which saving will be practiced depends on a variety of factors. Nevertheless, one would expect to find the largest amounts of capital accumulated by those nations whose income is large, either because their productive machinery is highly developed, or because they are rich in natural resources. Thus, Great Britain, a nation coming in this category, has for years been one of the most important creditor nations of the world, and the United States is to-day perhaps the wealthiest of all nations, both absolutely and in proportion to population. Rich in natural resources and endowed with the spirit of progressiveness, this country has experienced a remarkable industrial growth, and has found it easy to accumulate large amounts of capital because of her rapidly increasing income. Other nations, less favorably situated in respect to productive power, or lacking in initiative and organizing ability, or handicapped by social, political, or religious customs, are unable to produce much more than enough to supply the pressing needs of the moment. Obviously, such nations can save but little, if anything, and frequently such savings as are eked out are hoarded rather than invested in the modern sense of the word. This is particularly true in countries like India.

Savings dependent on established order.—Saving, especially for purposes of investment, is likewise dependent on the presence of an established order, as well as on constitutional safeguards which protect contractual and property rights. The investment of funds almost invariably implies a long time contract between creditor and borrower. Present goods, or wealth, is usually intrusted by the investor to entrepreneurs, who employ it in the erection of factories, railroads, buildings, or other forms of capital instruments. For the use of such funds the borrower agrees to pay back to the lender

not only the funds originally borrowed, but additional amounts in the form of interest. In other cases, the investor associates with others in a coöperative undertaking whereby he becomes a shareholder in a corporation or a member of a partnership. It is at once obvious that, as a lender, he must be adequately protected in his rights to enforce the payment of interest and principal according to the contract, at least up to the resources of the borrower; whereas, in the second case, the rights and equities of the various classes of shareholders or owners in the enterprise must be safeguarded.

In countries where common law and the legal mechanism is poorly developed, the uncertainty surrounding borrowing and lending operations discourages saving and investing. The same may be said of those countries where the government's attitude toward private ownership of capital goods is hostile.

The economic order prevailing in this country, in which a large proportion of the nation's wealth is privately owned, is sometimes labeled the "capitalistic order," and often has been denounced as undesirable. Generally, proposed reforms have incorporated some form of public ownership of capital goods. Under such a system public saving is virtually substituted for private saving. Various social experiments have been tried, involving the principle of public ownership of capital goods; but one of their fundamental weaknesses is the inevitable tendency to discourage all saving, and, hence, all capital accumulation. Investing in such a community, were it successfully operated, would become a public, not a private, problem.

Stabilized system of currency, necessity for.—Quite as important as the presence of an established order in its relation to savings is the existence of an established medium of exchange. The current medium of exchange is a measure of values, a denominator to which the relative values of all commodities are compared. Accordingly all contracts of sale, as well as contracts involving the investment of funds, are in terms of the established currency. Where this is subject to wide fluctuations it is natural that the people should refuse to loan present funds, in terms of currency, in return for a promise to pay back the principal of the loan at a future date with interest. The value of the returned currency in terms of goods may be considerably less than at the time the loan was originally made. Thus, in Germany, during the years

1922, 1923, and 1924, it was more advantageous for the wage-earner to spend his current wages before they depreciated in value than to attempt to save them. Likewise, those who had funds to invest sought to employ them in countries where conditions were more stable rather than suffer complete loss through further depreciation in the value of the mark. A similar condition existed in France, in 1925. The liability of a complete collapse of the franc tended to drive capital from that country to other countries where investment was safer.

Financial institutions aid savings.—The existence of a well developed financial system is another factor in stimulating savings. The growth of such institutions as the savings bank, the investment banker, insurance companies, and building and loan associations have all facilitated the saving process, in that they make it easy for the man with a small sum of accumulated capital to employ this in the development of large enterprises in coöperation with other small investors. The savings bank, for example, receives deposits as small as one dollar. In this way large aggregate sums are accumulated from many savers, each of whose deposits may, on the average, represent amounts so small that they could never be employed satisfactorily if held by the individual depositors, even granting that the average man could make his investments wisely, which, often, is not the case. On the other hand, it is the business of the officers of the bank properly to invest these aggregate sums. Insurance companies operate on a somewhat similar principle. The premiums paid to the insurance company by the policyholder are supposedly based on his life expectancy. Should he live just his expected life, the premiums paid plus accumulated interest thereon would equal the face value of his policy. It is necessary, therefore, for the insurance company to invest its premiums from year to year at a sufficient rate of interest to bring the entire value of the payments of any policyholder up to the face value of his policy at the time he is expected to die. Whereas, some of its policyholders will have a shorter life than their actuarial, or expected, life, others will live longer, so that the company, dealing with large averages, can compute accurately the premiums which it must charge for various classes of risks, in order to meet all claims. The accumulated premiums, which are one of the sources of the reserves of the insurance company, must, however, be

invested at all times. The result of this process is that the holder of the insurance policy builds up an equity behind his policy which about equals his actual payments. It so happens that the interest he would have received thereon had he invested these funds himself about pays for the protection that he receives.⁴ It is for this reason that a man who has a life insurance policy is compelled to save. His premiums, however, go to swell the aggregate funds which the insurance company has at its disposal for investment purposes. We are, therefore, correct when we say that the development of insurance companies encourages capital accumulation.⁵

The investment banker serves to stimulate saving in somewhat the same way as does the savings bank. He furnishes large units of capital by purchasing from corporations large blocks of securities, sometimes whole issues. These he retails to the small investor to whom, perhaps, he will sell only one \$500 bond, although bonds are usually issued in \$1,000 denominations.⁶ This process is sometimes carried farther by means of installment sales. The investment house sells a bond to a man who pays as little as \$100 down and agrees to pay for the balance over a period of months. In this way a systematic plan of saving is forced on the purchaser. The typical investment banker does more than to improve the mechanics of investing by the mere financing of issues *en bloc* and then retailing small units of stocks and bonds to the public. During the past twenty-five years, and particularly during the past decade, he has been responsible for creating intensive selling effort in the security markets. To-day every house of any importance has a veritable hoard of bond salesmen who practically make a "house to house" canvass among all classes in the community. School teachers, doctors, artisans, mechanics, any one with as little as \$500 or \$1,000 to invest is considered a prospect. Add to this the enormous selling effort put forth in advertising and direct-by-mail selling, and one gets a fair

⁴ It is true also, that many of the mutual companies pay dividends to their policyholders, which represent the amounts accumulated over and above death claims which result from conservative actuarial practices, or which result from earning more than the assumed rate of interest on their investments.

⁵ All forms of insurance result in some capital accumulation, even though losses equal premium payments. Successful companies are compelled, by the nature of their business, to build up satisfactory reserves, which are always carried in the form of investments.

⁶ Sometimes bonds are issued in denominations as low as \$100.

picture of the impetus given to saving and investing by the investment banker. In so far as the banker offers good securities, to that extent is he performing an economic service. In the case of those houses which canvass the small investor, however, selling costs are high and a large margin of profit is required. As a result, such houses sometimes offer securities of doubtful value. In such cases, their selling efforts must be considered as contributing but little to our social well being.

Corporate form of organization, effect of, on capital accumulation.—The development of the corporate form of business organization has also played a very important part in stimulating savings. The three distinguishing characteristics of the corporation may be summarized as follows: (1) its shareholders enjoy limited liability; (2) commonly, its life is perpetual; and (3) ownership or investment therein is represented by divisible shares or by bonds. Each of these characteristics has been influential in encouraging investment and the growth of large scale undertakings.

Under the partnership each partner is liable for the debts of the partnership without any limit beyond his own ability to pay. It is out of the question, therefore, to expect that a large group of partners could ever be found for a specific undertaking requiring a considerable investment, such as a railroad. Too much would depend on the financial ability and integrity of the other partners. Furthermore, partnerships are formed for a definite period, and, in any event, they terminate on the death of any one of the partners. Finally, the disposition or transfer of one's interest in a partnership is difficult and cumbersome from a legal standpoint. In the case of a corporation, on the other hand, ownership is represented by shares of stock, title to which may be transferred by indorsement. Bonds, which are evidences of debt, may be payable to bearer, in which case ownership follows the bond itself. It is not difficult to see where such a form of business organization has greatly encouraged private saving and investment by opening to the individual a wide range of opportunities for the commitment of funds. Some idea of the importance of the corporation as a factor in our industrial development may be had by reference to the statistics of the United States census on the character of ownership of manufacturing enterprises in this country.

CHARACTER OF OWNERSHIP OF MANUFACTURING CONCERNS IN UNITED STATES *

ESTABLISHMENTS						
	<i>Individuals</i>		<i>Corporations</i>		<i>All Others</i>	
1904	113,946		51,097		51,137	
1909	140,605		69,501		58,385	
1914	142,436		78,152		55,203	
1919	138,112		91,517		60,476	

VALUE OF PRODUCTS IN \$1,000						
	<i>Individuals</i>	<i>%</i>	<i>Corporations</i>	<i>%</i>	<i>All Others</i>	<i>%</i>
1904	\$1,702,830	11.5	\$10,904,069	73.7	\$2,187,002	14.8
1909	2,042,061	9.9	16,341,116	79.0	2,288,873	11.1
1914	1,925,518	7.9	20,183,147	83.2	2,137,769	8.8
1919	3,536,321	5.7	54,744,392	87.7	4,137,364	6.6

* Abstract of the Census of Manufacturers, 1919, p. 340.

It is not the actual growth in the number of corporations that interests one here, but rather the increase in the percentage of total value of products attributable to the corporate form of organization and the growth in the average size of corporations as indicated by the average output in dollars per establishment.

Thus, in 1904, 73.7 per cent of all manufactured products were turned out by corporations, whereas, in 1919, 87.7 per cent of total output was manufactured under corporate form of ownership. As further emphasizing our statement that the corporate form of organization has facilitated large scale operations, let us consider briefly the increase in the average size of the corporate enterprise in terms of output as contrasted with the increase in the average size of the partnership in terms of output.

AVERAGE OUTPUT PER ESTABLISHMENT *

	<i>Individually Owned</i>	<i>Corporate</i>
1904	\$14,944	\$213,399
1909	14,523	235,121
1914	13,518	258,225
1919	25,605	598,188

* Abstract of the Census of Manufacturers, 1919, p. 340.

This is conclusive evidence that the large scale undertakings in this country have been conducted almost entirely under the corporate form of business organization. One might carry

this argument one step farther and advance the theory that the investment problem as now recognized has been created almost entirely by extension in the use of the corporation as a form of business enterprise.

Thrift and savings.—The habits of a nation in respect to thrift have a very direct bearing on the rate at which capital can be accumulated. No better proof of this statement can be found than our experience during the Great War. Soon after August, 1914, a growing conviction was found among economists and bankers that interest rates would thereafter increase rapidly. This reasoning was based on the assumption that the saving habits of this nation were established and that a substantial change would inevitably take place in the demand for capital. European nations would be required not only to stop all investing in the American markets but to borrow here. In fact, Europe did actually succeed in drawing between five and six billions of capital from the United States during 1915 and 1916, either by the resale of American securities in our markets here or by the flotation of government loans in this country. And, strangely enough, this was all done without any substantial increase in interest rates. The obvious explanation of this situation is found in the rapid growth in the rate of savings that took place during these years.

But what took place during these years is relatively insignificant when one considers the ease with which from three to four times this amount was raised subsequent to our own entry into the War. Persistent and effective appeals were addressed to the American people to adopt a policy of saving. As a result, personal consumption was curtailed and funds were accumulated for the purchase of liberty bonds.

There are many interesting observations that might be made in respect to these facts. From our standpoint, their main significance is simply this: the investor must at all times be familiar with fundamental changes in the economic habits of people. The selection of proper commitments is a detailed task; but the adoption of proper policies, which will enable him to make the most of wide swings in interest rates, changes in the direction of people's tastes and habits, changes in the price level, and the value of money require a broad vision and a wide study of the interrelations between diverse economic forces.

Principal sources of saving.—The principal sources of new capital in this country may be said to fall under three main headings: individual savings; corporate savings, that is, the surplus accumulation of private corporations operating for gain; and, finally, the contributions made by banking or financial institutions, such as savings banks, commercial banks, insurance companies, building and loan associations, and the like. This list, while not complete, probably accounts for by far the greater proportion of savings in this country. An attempt to indicate the amount of saving coming from each group is difficult, for a certain amount of overlapping is inevitable. Individual savings, for instance, may be invested in life insurance and thus be included again in the total for insurance companies. The same may be said of savings deposited in savings banks. Although we shall examine estimates of the total of all savings in the United States, and the apparent savings from important groups of institutions, the preceding difficulties and inaccuracies should be borne constantly in mind.

National income and savings.—There is unquestionably a very close relationship, under normal conditions, between the size of a nation's income and the rate at which it accumulates capital. In fact, it is desirable, when discussing the total savings of a nation, to consider at the same time its income.

One of the most recent studies of our national income and the amount of annual savings is found in a study by Willford I. King. The following table, according to Dr. King,⁷ shows the total national income and the income saved from 1909 to 1918, inclusive.

⁷ King, Willford I., "The Net Volume of Saving in the U. S.," *Am. Stat. Jour.*, Vol. 18 (New Series), p. 140; Vol. 18, p. 467. The figures given here for national income are a later revision of similar studies made by the National Bureau of Economic Research (see Vol. 1 of "Income in the United States"). The estimates for savings vary widely from estimates made by Dr. David Friday (see "Wealth, Income, and Savings," *Annals of American Academy*, January, 1920, pp. 34-43). Dr. Friday's estimates for savings are given below:

Year	Annual Savings, in Millions
1913	\$ 6,500
1914	9,000
1915	14,500
1916	18,000
1917	22,000

TABLE SHOWING NATIONAL INCOME AND SAVINGS IN UNITED STATES

(From 1909 to 1918, in Millions)

<i>Year</i>	<i>Total National Income Measured in 1913 Dollars</i>	<i>Total National Income Measured in Dollars of a Given Year</i>	<i>Total National Sav- ings Measured in Dollars of a Given Year</i>	<i>Total National Income Saved in 1913 Dollars</i>
1909	\$30,608	\$29,259	\$5,001	\$5,231
1910	32,176	31,471	5,387	5,509
1911	31,397	30,904	4,221	4,289
1912	33,985	33,807	5,272	5,298
1913	35,436	35,436	4,879	4,880
1914	33,067	33,401	4,183	4,140
1915	35,150	35,920	7,542	7,381
1916	41,669	45,861	12,547	11,401
1917	42,377	54,664	9,237	7,162
1918	38,830	59,930	—1,844	—1,196
Total	<u>\$324,095</u>	<u>\$361,394</u>	<u>\$60,113</u>	<u>\$54,095</u>

If we assume that the estimate of annual income saved as computed by Dr. King is correct, it appears that the capital accumulation of the people of the United States amounted, on the average, to about \$5,500,000,000 annually during the period studied, based on 1913 dollars. Estimates of annual income for the years 1919, 1920, and 1921 indicate a very slight upward trend.⁸

In current dollars the annual savings of the country may therefore be estimated at \$10,000,000,000, or possibly more. This does not mean that \$10,000,000,000 have been hoarded. It means that goods, services, labor, materials, and managing ability have been diverted from the production of goods for immediate consumption to the creation of railroads, machines, factories, public utility plants, and so on; that there has been an aggregate increase in our productive machinery which, measured in terms of current dollars, amounts to about \$10,000,000,000, annually. It is distinctly an investment problem to determine the channels into which this annual accumulation shall be poured. Shall extensions be made to automobile factories, shall more cotton mills be erected, shall more steam-

⁸ National Bureau of Economic Research, "Income in the Various States, Its Sources of Distribution, 1919, 1920, and 1921," p. 249. Estimated national income in 1913 dollars: 1919, \$36,995,000,000; 1920, \$35,284,000,000; 1921, \$49,008,000,000.

ships be built, and so on? We have spoken of this as a "problem." It is, both from a social and an individual standpoint. It will be well for the student, at an early stage in his approach to the subject, to grasp the importance of first determining the lines of activity that offer the most secure opportunities for the employment of additional capital.⁹ For example, the stocks of cotton and woolen textile mills have, since 1924, been in very poor repute. Nor does the industry hold out any very large attractions for the future.¹⁰ This situation may be compared with the electric light and power industry, where an almost unlimited field for expansion still exists.¹¹ Therefore, in so far as the proper selection of industries for investment purposes is concerned, the savings of the country will represent extensions in the productive equipment of those industries whose products are most sought by the consuming public.

Changes in distribution of wealth and savings.—The savings of the American people, as we have seen, represent accumulated wealth. The total wealth of the United States in 1922 has been estimated at \$353,000,000,000, of which around \$122,000,000,000 consisted of land.¹² Fundamental changes, however, have taken place during the past twenty-five years in the distribution or ownership of this wealth. Going back to about 1900 one finds a distinct concentration in the hands of a very small part of the population. It has been estimated that at that time four fifths of the population owned but 10 per cent of the national wealth; while 18 per cent of

⁹ In fact, a brief survey might easily be made of typical lines of industry. This may be done by taking the five leading individual concerns in the lines or industries selected and plotting their aggregate profits for the past ten years. This may then be followed by a more detailed study of the industry itself. In such an analysis the student will do well to consider the organization within the industry, the character of plant required, how far large scale production can be carried advantageously, to what extent business failures have occurred in the industry during the past ten years, what the public demand is for the product, whether the industry supplies a necessity or a luxury, and so on. An excellent typical study of this kind referring to the automobile industry will be found in the *Harvard Business Review*, Vol. IV, No. 4, p. 407. Note there "The Evolution of the Automobile Market," by Clare Elmer Griffen. Having made such a study, one is in a position to avoid certain classes of securities entirely and to take advantage of those which offer the greatest opportunities.

¹⁰ For complete current statistics on cotton textiles see Year Books of National Association of Cotton Manufacturers.

¹¹ See Chapter XVI for more complete statistics regarding this industry.

¹² "National Wealth and Income," Federal Trade Commission, 1926, p. 2.

the population, comprising the upper middle class, owned one third; and 2 per cent, comprising the wealthy class, possessed nearly three fifths of the total.¹³ It would be a logical inference that savings follow wealth and that a very small percentage of our population in 1900 was responsible for the total savings of the country in that year.

Within recent years, however, there has been a distinct tendency toward a wider distribution of our national wealth. Definite proof of this situation is found in the wider distribution of corporate ownership in the United States as evidenced by the following table:

ESTIMATED NUMBER OF STOCKHOLDERS IN U. S. 1900-1923 *

Year	Total Capital Stock of All Corporations in U. S.	Average Number of \$100 Par Value Shares per Stockholder	Estimated Number of Stock- holders in U. S.
1900	\$61,831,955,370	140.1	4,400,000
1910	64,053,763,141	86.3	7,400,000
1913	65,038,309,611	87.0	7,500,000
1917	66,584,420,424	77.3	8,600,000
1920	69,205,967,666	57.3	12,000,000
1923	71,479,464,925	49.7	14,400,000

* Taken from a study made by Warshow, H. T., "The Distribution of Corporate Ownership in the United States," *Quarterly Journal of Economics*, Vol. 39, No. 1, p. 28.

Corroborative evidence along these lines is also found in the decreasing amounts of total income received by the wealthy classes in recent years. It is estimated that, in 1913, the highest 5 per cent of income receivers accounted for 33 per cent of the total national income, while in 1919 this class received only 24 per cent of the national income.¹⁴

Similarly do we find the net income reported by the lower classes of income receivers for income tax purposes making up a large proportion of total income during recent years, while the income accounted for by the wealthier classes is of less importance. The following table shows data for the years 1918 and 1924:¹⁵

¹³ King, Willford I., "Wealth and Income of the United States," pp. 80-82.

¹⁴ "Income in the United States," National Bureau of Economic Research, Vol. 1, 1921.

¹⁵ Taken from "Statistics of Income, United States, 1918, and 1924."

DISTRIBUTION OF PERSONAL INCOMES BY INCOME CLASSES

(Shown by the Official Compilation for Years 1918 and 1924)

<i>Income Classes</i>		<i>Percentage Amount of Income</i>	
		1918	1924
under \$1,000			0.92
\$ 1,000	to \$ 2,000	14.02	13.89
2,000	3,000	22.78	20.57
3,000	5,000	22.20	26.61
5,000	10,000	13.47	11.66
10,000	25,000	10.90	11.13
25,000	50,000	6.14	6.24
50,000	100,000	4.27	4.16
100,000	150,000	1.78	1.47
150,000	300,000	1.92	1.46
300,000	500,000	.91	.66
500,000	1,000,000	.75	.62
1,000,000	and over	.86	.61

If we were to generalize on the basis of the preceding facts, we would conclude that the contribution to annual savings made by the general public, consisting of people regarded as the middle class, is becoming of increasing importance. This fact has already been recognized in a practical way by investment bankers who have increased their sales efforts among this group of investors, and who have helped to devise investment trusts in order to provide diversification for the small investor.¹⁶ It is also significant to note that this class of persons is forming the saving habit. In years to come we may expect a considerable increase in the contribution to our growing capital fund from the small investor.

One may also draw the conclusion that the so-called "thrift movement," popularized during the War and developed since that time, is resulting to-day in a substantial addition to the supply of capital in this country and may be one of the more important factors contributing to low interest rates.

Corporate savings.—Another important source of savings upon which some statistical information is available is the amount of annual net earnings of domestic corporations and other forms of business organization which are not declared as dividends, but which are carried to surplus. It is the customary practice of American corporations to set aside a

¹⁶ Chapter XXI deals with the present development of investment trusts in this country.

certain portion of annual earnings to provide for expansion. That the amount so saved is large is indicated by the following table:

ESTIMATE OF ACTUAL SAVINGS IN THE FORM OF CORPORATE SURPLUS*

(From 1910 to 1920, in Millions)

<i>Year</i>	<i>Estimated Actual Savings</i>	<i>Year</i>	<i>Estimated Actual Savings</i>
1910	\$1,204	1916	\$3,866
1911	914	1917	3,369
1912	912	1918	1,653
1913	1,037	1919	1,958
1914	526	1920	1,041
1915	1,575		

* "Income in the United States," National Bureau of Economic Research, 1922, Vol. II, p. 329.

Significance of corporate savings to investor.—To the student of investments these figures carry a somewhat wider significance than that of merely indicating the amount of savings accumulated in this way. The amount credited to the surplus account of a corporation in any given year is precisely the same as an equivalent investment in the corporation by the common stockholder. Sooner or later this investment must come back to him in the form of an appreciation in the market value of his stock, or as a stock dividend. The current cash return on a share of stock, therefore, is a less important guide to its intrinsic worth than is its earning power.¹⁷ The large

¹⁷ "Income in the United States," National Bureau of Economic Research, 1922, Vol. II, p. 324. The following table shows the estimated divisions of net earnings between dividends and surplus for American corporations:

<i>Year</i>	<i>Estimated Division of Net Earnings between Dividends and Surplus</i>	
	<i>% Paid in Div.</i>	<i>% to Surplus</i>
1910	58.8	41.2
1911	66.6	33.4
1912	71.9	28.1
1913	69.5	30.5
1914	77.9	22.1
1915	56.2	43.8
1916	42.7	57.3
1917	50.2	49.8
1918	56.9	43.1
1919	63.1	36.9
1920	65.0	35.0

surplus accumulations during the War years, as shown by the previous table, were partly returned to the stockholders of American corporations in the form of stock dividends during 1921 and 1922. Current accumulations, on the other hand, while less spectacular, are, nevertheless, relatively large. It is for this reason that the stockholders of conservatively managed companies receive, at fairly regular intervals, "melons" in the form of stock dividends, stock split-ups, or subscription rights.¹⁸

Financial institutions and savings.—A third source of capital funds which must be mentioned briefly comprises financial institutions, such as banks, insurance companies, building and loan associations, and so forth. Some of the functions of these institutions have already been discussed in part. We will, however, at this time, devote further attention to the relation of such institutions to the savings process.

Let us consider first the commercial bank. These banks not only assemble capital from a number of individuals but also manufacture credit within certain limits. Cash, left on deposit, constitutes the basis for loans considerably in excess of the amount of cash, or reserves, held at any one time. The process of loaning in this way, however, presupposes borrowers who discount their notes with the bank and who receive therefor deposit credits or bank notes. The credit so advanced gives these borrowers purchasing power which may be used to purchase capital goods. While this process can scarcely be considered as a real creation of capital goods, since the borrowers must shortly repay their loans, it is, nevertheless, true that a relatively large amount of such credit is constantly maintained in circulation at all times, no small part of which is used by borrowers to carry investment securities. We must, therefore, consider commercial banks as a factor in discussing the sources of capital in the country. Furthermore, we find the banks themselves frequently utilizing their resources in purchasing stocks and bonds in the open market and carrying these for considerable periods of time.

Some idea of the scale on which current operations of this nature are conducted by commercial banks of this country may be had from the following table:

¹⁸ For further discussion of the significance of reinvested earnings on common stock values see p. 312.

TABLE SHOWING RESOURCES AND LIABILITIES OF COMMERCIAL BANKS

(June 30, 1926)

	7,978 <i>National Banks*</i> (ooo omitted)	16,493 <i>State Banks† (Commercial)</i> (ooo omitted)	1,656 <i>Loan and Trust Companies†</i> (ooo omitted)	495 <i>Private Banks†</i> (ooo omitted)	<i>Total Banks</i> (ooo omitted)
Resources:					
Loans and Dis-					
counts, Over-					
drafts, etc. . . .	\$13,659,853	\$9,738,735	\$6,757,525	\$93,079	\$30,249,192
Securities Owned. .	5,842,253	3,220,400	2,806,780	35,506	11,904,939
Banking Quarters .	632,842	454,801	265,819	4,850	1,358,312
Real Estate Owned .	115,869	152,115	47,607	8,135	323,726
Lawful Reserves. .	1,381,171	777,430	730,494	3,048	2,892,143
Cash Items	3,409,195	1,874,249	1,163,414	25,714	6,472,572
Redemption Fund. .	33,023	—	—	—	33,023
Other Assets . . .	241,418	361,926	433,557	3,820	1,040,721
Total	\$25,315,624	\$16,579,656	\$12,205,196	\$174,152	\$54,274,628
Liabilities:					
Capital Stock . . .	\$1,412,872	\$1,092,424	\$ 672,959	\$ 9,895	\$3,188,150
Surplus, Undivided					
Profits, etc. . . .	1,676,486	951,668	994,205	12,881	3,635,240
Notes Outstanding .	651,155	—	—	—	651,155
Total Deposits and					
Bills Due	20,642,164	14,149,041	10,007,495	144,534	44,943,234
Other Liabilities. .	932,947	386,523	530,537	6,842	1,856,849
Total	\$25,315,624	\$16,579,656	\$12,205,196	\$174,152	\$54,274,628

* Taken from Report of Comptroller of Currency, 1926, p. 19.

† *Ibid.*, p. 90.

Thus, on the basis of capital and surplus amounting to \$6,800,000,000 and cash and reserves amounting to \$9,300,000,000, the commercial banks of the country have been able to create loans amounting to \$30,000,000,000 and to purchase securities amounting to nearly \$11,000,000,000. This is not a technical analysis of the principles involved in commercial banking, but will serve to bring out the point at issue, namely, that commercial banks, in a way, manufacture credit and constantly maintain in circulation a fund which gives to the business community command over capital goods.

Quite different in their relation to the accumulation of capital funds are savings banks, insurance companies, and building and loan associations. Such institutions have no power of expanding credit operations. As we have seen, they function rather as middlemen, collecting the savings of many indi-

viduals and investing such funds in long term securities—bonds, mortgages, and real estate loans for the most part. Their importance, therefore, lies in their ability to mobilize a large number of small accounts into a sizable fund, and to direct the investment of such a fund. Insurance companies not only accumulate funds somewhat in this way, but also offer protection against certain risks. Their investment function, however, is similar to that performed by savings banks.

The principal items in the consolidated statement of the savings banks of the country are "loans and discounts" and "investments" on the asset side, and "individual deposits" on the liability side. The combined loans and discounts and investments of 1,524 stock and mutual savings banks on June 30, 1926, amounted to \$9,943,664,000, while the combined deposits were \$9,599,118,000.¹⁹ We may infer from these data that about \$10,000,000,000 had been assembled by savings banks from small savers and invested by such banks in mortgages, bonds, and other high grade types of credit instruments.

As a factor in assembling savings, the life insurance companies of the country to-day exercise nearly as great an influence as the savings banks. In fact, life insurance companies have, within the past twenty-five years, developed at a remarkable rate, total assets having increased from \$1,742,414,000 in 1900 to \$11,537,615,000 in 1925.²⁰ Partly on account of stricter supervision and partly on account of wider participation, the character of life insurance investments has shown a distinct change during this period.

ASSETS AND INVESTMENTS OF LIFE INSURANCE COMPANIES IN THE UNITED STATES *

(000 omitted)

	1900	1905	1910	1915	1920	1925
Total Assets..	\$1,742,414	\$2,706,187	\$3,875,877	\$5,190,310	\$7,319,997	\$11,537,615
Real Estate						
Mortgages .	501,499	723,507	1,227,232	1,799,279	2,174,863	4,799,216
Stocks Owned	794,632	172,742	129,622	81,056	51,356	81,462
Bonds Owned.	7,191	1,212,637	1,659,845	2,094,688	3,588,728	4,331,288
Premium Notes and Loans..	88,501	225,568	495,100	779,159	858,915	1,445,507

* "U. S. Statistical Abstract," 1926, p. 297.

¹⁹ Taken from "Report of Comptroller of Currency," p. 19.

²⁰ "U. S. Statistical Abstract," 1926, p. 297.

In 1900 real estate mortgages and bonds constituted less than 30 per cent of total assets, while stocks made up about 45 per cent of total assets. In 1925, however, real estate mortgages and bonds comprised 79 per cent of total assets, while stocks owned amounted to less than 1 per cent.²¹

Although differing from savings banks in the detail of their operations, building and loan associations also accept deposits from individual savers and lend on first mortgages. According to the customary plan under which these banks operate, the borrower takes out running shares equivalent to his mortgage and his current payments on these shares represent interest on his loan and provide at the same time for a reduction in the principal amount of his mortgage. On the other hand, it is possible to purchase either running, or paid-up shares without a corresponding mortgage loan. In the former case, the shareholder opens an account with the bank, makes an initial payment, and regular monthly payments thereafter. Where the rate of interest is $5\frac{1}{2}$ per cent on running shares, as it is in most Massachusetts banks, the purchaser of each share who has paid five dollars a month for a little over eleven years receives a paid-up share with a par value of \$1,000. Paid-up shares may be purchased by payment in full at any time. The funds which these banks have at their disposal are almost entirely invested in real estate mortgage loans. These associations have experienced a rapid growth in the United States during the past twenty-five years. In 1925 there were 12,403 such associations, having 9,886,997 members with \$5,500,000,000 of assets.²²

Other sources of savings.—There are many other sources of capital accumulation less susceptible of accurate statistical measurement. Undoubtedly there is a substantial reinvestment of income each year on the farms of this country. Such portion of current income as is not used by the owner of a farm is available for investment, and it is a reasonable assumption that a proportion of such excess income is actually invested

²¹ This tendency is a natural one. In the case of insurance companies their obligations are dollar obligations. They are not concerned with changes in the purchasing power of the dollar. The customary investment principles which dictate that an individual place part of his funds in common stocks in order that he may profit from upward changes in the price level do not, therefore, apply to insurance companies.

²² "U. S. Statistical Abstract," 1926, p. 267.

by the farm owner in his own enterprise. The annual savings which are reflected in home dwellings are likewise not susceptible of definite measurement; but, nevertheless, they represent a definite form of capital accumulation. It is, of course, inaccurate, when considering accretions to the value of farm property and urban real estate, to include appreciation in land values, other than in the form of actual improvements. A mere appreciation in land value is in the nature of an unearned increment. From the individual's point of view it is added wealth, but from a social standpoint there has been no creation of new goods.

Our discussion might be extended to include the savings of fraternal orders and other forms of coöperative insurance, religious and charitable organizations, and educational and endowed institutions. No doubt, the aggregate savings from such sources are large, and, to a certain extent, represent accumulation quite apart from that of individuals. This is true to the extent that the return on endowment funds is not entirely spent in current operations. Complete and reliable information, however, is lacking as to what the total from such sources is.

Summary.—In summary it may be said that the current annual savings of this country amount to about \$10,000,000,000. The primary sources of saving are individuals, corporations, and endowed institutions, although commercial banks may be said to create a distinct fund of capital through current operations. Insurance companies, savings banks, building and loan associations, and other similar agencies, while creating capital through accumulation of reserves, act essentially as media through which individual savings are collected, and, as such, cannot be said to contribute directly to the supply of capital of the country.

CHAPTER III

DEMAND FOR CAPITAL

Productivity of capitalistic processes and demand for capital.—The demand for capital comes largely from individuals and corporations engaged in business undertakings, and from governments. It is true that loans for consumption purposes figure in the total demand for capital, but the aggregate of such loans is relatively small. In any event, we are concerned primarily with such capital requirements as find expression in the security markets of the world, and these are based almost entirely on the borrowing operations of governments, or of individuals or corporations, who expect to use the capital they secure productively.

The normal, or business, demand for capital arises primarily because indirect methods of production are more productive than direct. Command over capital, however, is necessary in order to utilize and extend such methods of production. It is this essential fact that gives rise to the normal demand for capital, and it is the extent to which profitable uses can be made of capital that determines the intensity of this demand at any given time, and, hence, the rate of interest or price that can be offered for capital.

Factors affecting demand for capital: changes in population and inventions.—A statistical measurement of the total demand for capital at any given time would be exceedingly difficult, although it is possible to indicate fundamental changes in economic environment, which may act to stimulate or to depress this demand. For instance, a normal growth in population will, per se, give rise to a greater demand for capital funds; but at the same time total savings normally increase, so that it is quite possible for interest rates to remain constant at the same time that population grows. In fact, capital may be, and usually is, in progressive countries, accumulated at a rate more rapid than that shown for the growth of population. This occurs because progressive nations, through the extension of capitalistic methods of production, increase output, and, hence, total income, at a rate that permits larger and larger

per capita savings. Under such conditions the rate of interest would tend to fall were it not for advances in the arts and sciences which call for capital investments on a growing scale, in order to turn out an ever increasing variety of goods and services for the consumer.

Growth of new industries: the motor industry.—Somewhat analogous to developments in the arts and sciences in its effect on the demand for capital is the growth of new industries. This is, indeed, an everyday phenomenon frequently overlooked, yet each new industry that comes into existence creates wider opportunities for the effective use of capital and thus contributes to the total demand therefor. A few selected cases will suffice to illustrate this point. The motor industry may be considered as a product of the present century. In 1899 the census reports a capital investment therein of only \$5,769,000. In 1909, however, the figure for invested capital stood at \$173,837,000; in 1919, \$1,780,949,000.¹ The effect of so rapid a development, with its accompanying demands for capital, must inevitably have tended to maintain or to increase interest rates.²

The total capital requirements for all manufacturing enterprises of the country have not increased at the same rapid rate as that shown for special industries, such as the automobile industry, yet the capital employed in manufacturing in this country increased fivefold from 1899 to 1919. The actual capital employed for selected years during this period is shown in the accompanying table.

CAPITAL EMPLOYED IN MANUFACTURES *
(000 omitted)

<i>Year</i>	<i>Amount</i>
1899	\$8,975,256
1904	12,675,581
1909	18,428,270
1914	22,790,980
1919	44,466,594

* "U. S. Statistical Abstract," 1923, p. 289.

¹ The Census Bureau discontinued the collection of statistics on capital invested in manufactures after the 1919 census. The census figures shown above include investment in the manufacture of bodies and parts as well as automobiles. The National Automobile Chamber of Commerce ("Facts and Figures of the Automobile Industry," 1927, p. 12) estimates the capital invested in the industry, exclusive of bodies and parts, at \$1,015,443,338, in 1919, and \$2,089,498,325, in 1926.

² The point here is essentially to indicate the effect of such a development on the demand for capital funds.

Electric light and power industry.—Another example which illustrates the extent to which a specific industry may, through phenomenal growth, increase the demand for capital funds is found in the electric light and power industry. Based on figures given by the United States census, the value of total plant and equipment used by this industry in 1902 was but \$504,740,352. In 1912 this figure stood at \$2,176,000,000; in 1922, at \$4,465,000,000.³ The development of this industry during the past quarter century on so extensive a scale could never have been accomplished without an enormous investment of capital therein. In fact, the security issues of electric light and power companies at present reach an annual figure of well over a billion dollars.

Other public utilities and steam railroads.—Other public utilities have developed rapidly during the past quarter century, although in a somewhat less spectacular manner. Their growth has, nevertheless, required a constantly increasing capital investment, and, hence, has augmented the total demand for capital funds. Total capitalization of gas companies, for example, has increased from \$567,000,000 in 1899 to \$1,466,000,000 in 1919.⁴ The capitalization of our electric railway industry increased from \$2,308,000,000 in 1902 to about \$5,447,000,000 in 1922.

Our steam roads have also been required to extend their facilities in order to keep pace with our rapid industrial growth and the spread of population westward. The rate of growth here is less phenomenal than in the case of some of the newer industries, but the total increase in capital requirements has probably been the largest of any individual industry in this country. We find that, in 1900, capital employed by the railroads of this country amounted to \$11,491,000,000 whereas, in 1925, the figure stood at \$23,644,000,000.⁵ The net increase here was thus over \$12,000,000,000.

The essential point to be kept in mind at this time in regard to all these figures is that the increasing variety in human wants, industrial progress, inventions, and improvements in the

³ Capital invested in the electric light and power industry on January 1, 1927, has been estimated at \$8,400,000,000. "The Bonbright Survey of Electric Power and Light Companies of the United States," (4th ed.), 1927, p. iv.

⁴ U. S. Census. The Census Bureau has discontinued the collection of capitalization figures for gas companies since 1919, and of electric railways since 1922.

⁵ "U. S. Statistical Abstract," 1926, p. 384.

arts and sciences all increase the demand for capital by making its use more profitable; in the words of the economist "by increasing the marginal productivity thereof." We might perhaps make our point clearer if we were to state that, when the demand for the products of an industry increases sufficiently, when methods of production are devised which increase output or lower cost, or when new machinery is invented which accomplishes the same ends, the demand for capital funds is correspondingly augmented. Indeed, this process is going on at all times, and for this reason new funds always find opportunities for profitable employment. Let the development of new industries cease, or let extensions and improvements in present industries subside, and the process of finding satisfactory employment for capital would become increasingly difficult.

Annual security flotations: domestic corporations.—A fairly good picture of the recent annual capital requirements of all domestic corporations may be derived from a study of new security flotations. These figures, however, fail to give an accurate picture, since they include both new issues, that is, issues to provide for extensions, and additions to new properties, as well as funding issues. The latter type of security does not represent a real additional demand for capital, since the proceeds therefrom are used to retire other securities already in the hands of the investing public.

NEW CAPITAL ISSUES OF DOMESTIC CORPORATIONS •

(ooo omitted)

<i>Year</i>	<i>Total</i>
1910	\$1,518,272
1915	1,435,351
1920	3,106,931
1921	2,634,869
1922	3,423,948
1923	3,601,438
1924	3,219,146
1925	3,642,012
1926	3,689,351

* "U. S. Statistical Abstract," 1926, p. 306.

Undoubtedly increases in the price level accounted in part for the substantially larger capital requirements during the year 1920 and subsequent years, yet the extremely rapid devel-

opment which has taken place in our great national industries could not have been maintained without large and increasing capital investments.

Government requirements: nature of government borrowing.—Up to this point we have neglected to consider the capital requirements of our national government and divisions thereof—state, county, and municipal. Before we come directly to a discussion of the extent of this demand, however, we shall pause for a moment to examine the social aspects of public, as compared to private, borrowing. By far the largest portion of private borrowing is undertaken for purposes of extending production. This does not necessarily apply to public borrowing, and for this reason in any discussion of the latter some attention ought to be given to the purposes for which loans are made. Our position here is correct, even though the question of purpose does not, in the first instance, affect the total demand for capital. From a social standpoint, on the other hand, there is a sharp distinction between loans made for unproductive purposes, such as carrying on a war, and loans made purely for productive purposes, such as the erection of schools, roads, bridges, or other public improvements. In the first case, there is a destruction of capital; materials and resources are used in the prosecution of a war and are consumed once and for all. Quite different is borrowing for the purpose of building, say, the Panama Canal, roads, schools, buildings, and the like. Here the social gain differs but little from that which results when private enterprises borrow in order to create productive facilities. There has been a social saving, and a corresponding increase in the sum total of social capital.

Our national debts.—Bearing this distinction in mind we shall consider briefly the extent of the public demand in this country for funds during recent years. For the decade prior to the Great War, the total indebtedness of our national government averaged between \$800,000,000 and \$1,000,000,000, a considerable portion of which had been incurred for productive purposes. A very large increase in our total national debt took place, however, during, and after, 1917, until August 31, 1919, when the interest-bearing debt stood at \$26,358,692,000. After that date there has been a gradual reduction. On June 30, 1926, the total interest-bearing debt of our national

government stood at \$19,383,771,000.⁶ It is probable that the coming decade will see a further reduction in our national debt. At least this may be expected so long as the current policy of government economy is followed. At the present time, therefore, no new demand for capital funds is likely to emanate from our national government, except for the purpose of funding old issues of bonds or for temporary funds in anticipation of current revenues.

State and municipal borrowing.—The capital requirements of our state governments and municipalities, on the other hand, have been increasing rather than decreasing since the War. Prior to the year 1917 the total flotation of municipal and state issues did not exceed in any one year the half billion mark, while, for the six consecutive years, 1921 to 1926, inclusive, total annual sales of municipal and state securities have exceeded the billion dollar mark.⁷

Various reasons have been set forth for this rather imposing increase in state and municipal borrowing. It is claimed by some that the ease with which tax-exempt securities could be floated during this period has been the primary cause. That is, in those years when surtaxes ran as high as 65 per cent, it is apparent that large investors found it highly advantageous to purchase bonds, the interest on which was exempt from all income taxes. Thus was a wide market created for tax-exempt

⁶ "U. S. Statistical Abstract," 1926, p. 206. See also Chapter XXIII, "Obligations of the United States Government and Instrumentalities Thereof."

⁷ *Commercial and Financial Chronicle*, "State and Municipal Compendium," June 25, 1927, p. 8; May 29, 1915, p. 4; May 28, 1904, p. 2044; April 1, 1903, p. 3.

TOTAL MUNICIPAL BOND SALES IN UNITED STATES
(1901-1924, Inclusive)

1901	\$131,549,300	1914	474,074,400
1902	148,463,600	1915	498,558,000
1903	152,281,100	1916	457,141,000
1904	250,755,000	1917	451,278,700
1905	183,080,000	1918	296,520,400
1906	201,743,300	1919	691,518,900
1907	227,643,200	1920	683,188,200
1908	313,797,600	1921	1,208,768,300
1909	339,424,000	1922	1,101,917,300
1910	320,036,200	1923	1,063,119,800
1911	396,859,700	1924	1,398,953,000
1912	386,551,800	1925	1,399,638,000
1913	403,246,500	1926	1,365,057,000

bonds of municipal corporations. Others lay the recent expansion in municipal indebtedness to extravagance in local government operations. The real causes are probably to be found partly in the rapid increase in prices during and after the War, and partly in the increasing capital needs of municipalities and states arising from the normal growth in population and from the rapid increase in our social income. At least there is some evidence in favor of this view, when an examination of the purposes for which recent loans have been floated is undertaken. By far the largest items for which bonds have been issued since 1921 are for the building of streets, roads, bridges, and schools. These items alone have, in fact, accounted for approximately 50 per cent of all borrowing in recent years.⁸ During this period, however, over \$300,000,000 of soldier bonus bonds were issued by states, which represent in all probability a temporary policy. Borrowing on this account was occasioned by the War, and, since the funds so acquired were immediately turned over to the soldiers who participated in the bonus, it is hardly proper to consider these bonds as issued for capital expenditures. They represent borrowing for consumptive rather than for productive purposes.

⁸ *Commercial and Financial Chronicle*, "State and Municipal Compendium," June 27, 1927, p. 9.

PURPOSES FOR WHICH STATE AND MUNICIPAL BONDS WERE ISSUED

(1923 to 1926, Inclusive—% of Total)

<i>Purpose</i>	1926	1925	1924	1923
Refunding	1.58	3.40	1.38	1.88
Water	10.47	8.38	10.31	8.17
Streets, Roads, Bridges.....	26.72	28.06	27.22	29.58
Sewers	7.95	9.32	6.75	8.39
Schools	19.07	23.14	20.62	19.59
Buildings	5.20	4.16	6.34	4.44
Parks	3.06	1.45	2.20	2.81
Light and Gas.....	.91	1.43	1.46	1.49
Funding .....	.78	1.08	1.16	1.83
Improvement	16.87	13.69	7.70	5.97
Soldiers' Bonus .....	.29	.55	5.15	8.65
Flood Prevention .....	.60	.70	1.15	.38
Harbor and Water Front...	1.32	1.09	1.89	1.84
Transit	3.30	.92	1.85	1.70
Irrigation	1.00	1.62	1.38	1.36
Miscellaneous .....	.88	1.01	3.44	1.91

From the standpoint of good financing, therefore, it is well that no further issues of this kind are anticipated in the near future. The most plausible explanation of the growth in municipal and state capital requirements, therefore, is to be found in the general rise in the price level and the larger expenditures necessary for schools, roads, water and light projects, and other permanent improvements of a capital nature arising out of the growth in wealth and population of the country.

Capital demands of foreign nations.—The demand for capital on the part of foreign governments and corporations is likewise being felt on an increasing scale in our domestic markets. The reasons for this situation are not hard to find. Nearly all European nations were impoverished as a result of the War. The severity of the struggle resulted in an enormous waste of capital. Furthermore, the productive powers of the populations of many European countries were substantially lessened. Hence, do we find a low present income and a pronounced dearth of capital goods in many of these countries. The United States, on the other hand, suffered but little in a material way, and during the post-war period actually enjoyed an increase in productive power and social income. The saving of capital in this country, therefore, has been increasingly easy. These changes have resulted in the United States becoming one of the largest creditor nations of the world. In 1914 it is estimated that the United States had invested abroad about \$1,500,000,000, whereas it owed to foreigners an aggregate sum of about \$4,000,000,000, thus leaving a net indebtedness amounting to \$2,500,000,000.⁹ In contrast to this situation let us consider briefly the present extent to which we have invested capital abroad. In the first place, foreign governments, principally those countries allied with us during the War, owe to our government a principal sum approximating \$11,800,000,000,¹⁰ whereas the amount owed to individuals in this country by foreigners is estimated at around \$5,000,000,000. Furthermore, the rate at which foreign loans are being executed in this country is increasing annually. It is but natural that European nations should look to us for capital, in order to restore their productive power, and that we should extend accommodation to such nations, where the

⁹ *Chronicle*, Vol. 123, p. 2088.

¹⁰ On Nov. 15, 1926. "U. S. Statistical Abstract," 1926, p. 208.

security offered is properly safeguarded. Furthermore, new and undeveloped countries are looking more and more to us for the capital necessary to promote their economic development. During the year 1924, foreign loans floated in this country amounted to \$1,633,081,000, while, in 1925, \$2,129,019,000 of foreign securities were sold to American investors.¹¹ This movement is likely to continue in the future on an increasing scale, with the result that foreign securities will unquestionably develop into an important type of investment. The steadily expanding interest of the American public in foreign securities is best evidenced by the rapid growth in listings and turnover on the New York Stock Exchange. While, in 1913, there were scarcely a dozen different securities listed on this exchange, the number of foreign securities dealt in in 1926 was 145. This increase in the internationalization of the exchange is even better evidenced by turnover. The aggregate of foreign loans traded in on the New York Exchange in 1913 amounted to but \$3,459,000, while the total sales in 1925 on the exchange alone aggregated \$637,630,000.¹²

Building operations and capital requirements.—Further heavy demands for capital arise from building operations. The erection of homes, factories, and office buildings represent a capital investment and must be financed by saving from current income. Where the owner pays for the construction of the building without recourse to borrowing, no demand is exerted in the open market for funds, except in so far as his own funds, which might have been offered for investment, are prevented from appearing as a supply of capital. On the

¹¹ *Commercial and Financial Chronicle*, Vol. 126, p. 304.

FOREIGN CAPITAL FLOTATIONS IN THE U. S.

Year	Total
1920	\$ 522,448,887
1921	576,517,000
1922	756,476,034
1923	347,026,279
1924	1,244,795,765
1925	1,307,307,500
1926	1,349,793,040
1927	1,718,796,425

¹² "Report of Foreign Securities Committee," Investment Bankers Association, 1926, *Chronicle*, Vol. 123, p. 2088.

other hand, where the builder or owner borrows a part of the funds necessary to acquire or to erect buildings, to that extent is a demand created in the open market for capital funds. Large structures, such as office buildings and hotels, have for some time been financed by the issue of bonds, secured by mortgages on the property. Where the building of factories or other types of construction has been undertaken by corporations, the funds have likewise been acquired by bond issues, or sometimes by stock issues. Here, again, the demand for funds appears in the open market. The building or purchase of homes, on the other hand, has generally been financed by mortgage loans made by banks or by certain large lenders of money. Whereas, the total of such requirements has undoubtedly been large, the average investor has not, until recently, been asked to participate directly in this kind of financing. During the past several years, however, there has been an extensive growth in mortgage companies whose principal business has been to lend on small mortgages, deposit such mortgages with a trustee, and issue bonds against such collateral. These bonds, therefore, are secured by the deposit of a diversified lot of small first mortgages. The sale of these bonds to the private investor on an extensive scale has enabled him to participate in first mortgage financing on a much wider scale than formerly.

Some idea of the current demand for funds for building purposes is available from a study of the value of construction undertaken annually in the United States. It is estimated that, in 1926, new construction amounted approximately to \$6,800,000,000; in 1925, to \$6,600,000,000; and, in 1924, to \$5,237,000,000. These figures are estimates for the entire country, compiled by F. W. Dodge Building Corporation, and are based on compilations from thirty-six states east of the Rockies.¹³

¹³ *Chronicle*, Vol. 122, p. 282; Vol. 124, p. 300. Based on another study covering building operations in 262 of our largest cities the figures for the years 1919 to 1924, inclusive, were as follows (*Chronicle*, Vol. 120, p. 380):

Year	Value of New Construction
1924	\$3,547,252,000
1923	3,391,904,000
1922	2,764,077,000
1921	1,869,327,000
1920	1,608,036,000
1919	1,492,947,000

The total number of homes not on farms in the United States as shown for the last four census years is as follows:

HOMES IN UNITED STATES NOT ON FARMS*

1920	17,600,472
1910	14,131,945
1900	10,488,814
1890	7,922,973

* "Mortgages on Homes in the United States," 1920, Bureau of Census, 1923, p. 73.

The total number of homes in the United States increased by 3,468,527 from 1910 to 1920, or at an annual rate of 346,853. Statistics of value are not given for all homes in the United States, but only for owned-mortgaged homes. However, reports giving the value and amount of mortgage debt for 1890 show that there were 809,933 owned-mortgaged homes, not on farms, with a total value of \$2,632,000,000 and a mortgage debt of \$1,047,000,000. In 1920 the total value of 2,855,117 owned-mortgaged homes is estimated at \$14,099,000,000, and the total mortgage debt at \$6,000,000,000.¹⁴ The average value of owned-mortgaged homes in 1890 was thus \$3,250, and in 1920, \$4,938. If one applied these average values to the entire homes in the United States for these dates, he would get a value of \$25,750,000,000 for all homes in 1890 and \$86,908,800,000 in 1920. The annual increase in value here is about \$2,000,000,000. These figures are subject to two inaccuracies, however. A part of this increase in value is due to an increase in land values, and a part, to advancing prices. As indicating the capital requirements for home building in 1920, therefore, it would be more accurate to assume an annual increase in homes of 347,000, and an average value of \$4,938, thus giving an annual home building requirement at that time in terms of dollars amounting to about \$1,700,000,000.

Within the past five years long term real estate bonds have become increasingly popular as a vehicle of investment, with a distinct tendency for the annual totals of such bonds to increase. The following table shows the extent to which such bonds have been offered during this period:

¹⁴ "Mortgages on Homes in the United States," 1920, Bureau of Census, 1923, p. 43.

LONG TERM REAL ESTATE BONDS *

(ooo omitted)

—PURPOSE OF ISSUE—		—TYPES OF STRUCTURE—					
Year	Grand Total	Construction Loans	Real Estate Mort- gages Improvements	Acquisi- tions and	Offices	Hotels	Apts.
1922	160,056	101,422	12,790	26,512	74,050	32,115	28,840
1923	239,283	156,169	25,885	44,350	116,670	52,250	41,980
1924	319,253	228,117	51,931	12,678	146,567	59,563	66,802
1925	695,556	399,864	151,356	86,796	262,704	117,132	97,860
6 mos.							
1926	320,587	176,362	51,703	46,247	148,281	47,638	42,001

* *Chronicle*, Vol. 123, p. 2087.

Figures of this nature are estimates at best, but they serve to give some idea of the relative importance of the capital demands of specific lines of activity. Unquestionably, the building industry as a whole is responsible for an annual capital consumption exceeding any other one field of activity.

Capital requirements of agricultural industries.—There is undoubtedly a fairly large annual demand for capital in agricultural industries, although it is somewhat difficult to measure this demand precisely. Data relative to the value of farm properties other than land are affected by changes in the general price level, while fluctuations in land values, which have recently been rather wide in amplitude, really have no bearing on the supply and demand for capital.

Some light on the changes that took place in the aggregate values of different classes of farm property from 1910 to 1925 is given in the following table:

VALUE OF ALL FARM PROPERTY *

(ooo omitted)

	1925	1920	1910
Value of All Farm Property.....	\$57,017,740	\$77,923,652	\$40,991,449
Value of Land Alone.....	37,721,018	54,829,563	28,475,674
Buildings	11,746,629	11,488,440	6,325,452
Implements and Machinery.....	2,691,704	3,594,773	1,265,150
Live Stock	4,858,389	8,012,876	4,925,174
Value of Properties Exclusive of Land	\$19,296,722	\$23,094,089	\$12,515,775

* "U. S. Statistical Abstract," 1926, pp. 582-583.

It will be noted that the value of all farm property increased rapidly from 1910 to 1920, but showed a rather pronounced drop between 1920 and 1925. This was the result of a serious deflation in the value of farm properties that occurred after 1920. The only individual item that failed to register a decline after 1920 was that of buildings, which remained about the same from 1920 to 1925. Any conclusions one might draw from the preceding data regarding the capital requirements of agricultural industries would be subject to error. Thus, between 1910 and 1920, the value of farm property, exclusive of land, increased by \$11,578,314,000. On this basis, it might be inferred that annual capital requirements of agricultural industries were slightly over one billion dollars during the decade of 1910 to 1920. This assumption, however, ignores entirely the rapid advance that took place in the general price level during the period. Furthermore, if one pursued the same methods in estimating capital requirements for the industry from 1920 to 1925, he would get a negative result. Thus, while the preceding data give interesting information regarding the agricultural industry they do not aid in determining the capital requirements of the industry.

Somewhat more reliable information regarding agricultural requirements is available from the records of farm mortgages. According to data reported to the United States Census, the amount of mortgages outstanding on farms owned by operators (as distinguished from farms operated by tenants) was \$1,726,173,000, in 1910; \$4,003,767,000, in 1920; and \$4,517,259,000, in 1925.¹⁵ The per cent of total mortgages to total values in 1910 was 27.2; in 1920, 29.0; and in 1925, 41.8. It is apparent that farm owners throughout this period used outside or borrowed capital on an increasing scale to facilitate farm operation. If one applies the same percentages of mortgage debt to total value as shown by the census study to the total value of all farms (operated by owners and by tenants) at these dates, the *total farm mortgage* debt may be estimated at \$9,465,000,000, in 1910; at \$19,227,000,000, in 1920; and at \$23,813,000,000, in 1925. The average annual increase necessary to make up the difference between the 1910 and the 1925 figures approximates \$1,000,000,000. To this sum should be added the capital

¹⁵ "U. S. Statistical Abstract," 1926, p. 595.

requirements that are covered by current borrowing through banks, as well as those requirements that are met through reinvestment of income by the farmer himself.¹⁶

Installment sales and the financing thereof.—Within recent years a new type of financing has sprung up—the financing of installment sales of consumers' goods. It has recently been estimated that 17 per cent of the entire amount of consumers' goods sold at retail is disposed of on the installment plan. The total amount so involved in 1925 has been put at \$5,000,000,000.¹⁷ According to more recent estimates the annual sales of goods, exclusive of real estate, stocks, and bonds, on the installment plan in this country amounts to \$4,875,000,000, while the average amount of outstanding debt is \$2,201,000,000.¹⁸

Operations of this kind either require heavier loans from banks, which extend credit to the merchants carrying customers' accounts or which discount the notes of customers themselves, or they require the aid of finance corporations, that is, corporations which specialize in discounting installment notes. While installment selling actually does create a demand for capital, and thus has an effect on interest rates, the resulting borrowing must be regarded as "consumption" borrowing in contrast to the financial operations of business concerns engaged in production.

Current capital requirements.—Quite different from a social standpoint, however, is short time borrowing for productive purposes by manufacturing and selling concerns. Our existing business structure requires the use of liquid capital on an extensive scale for the purpose of financing more or less current capital requirements. Thus the normal business concern, whether engaged in manufacturing or distribution, frequently borrows from commercial banks for the purpose of financing such current operations. In view of the fact that the total volume of such loans is always large we may regard this

¹⁶ Kirshman, John E., in "Principles of Investment," p. 60, 1924 (A. W. Shaw & Co., Chicago), estimates the annual agricultural demand for credit at \$1,500,000,000.

¹⁷ Survey made by U. S. Chamber of Commerce. See *Chronicle*, Vol. 122, p. 1561. A recent estimate made by the Farmers Loan & Trust Company, covering selected lines only, places the amount at \$3,293,412,000.

¹⁸ Seligman, E. R. A., "The Economics of Installment Selling," p. 18, 1927, Harper & Bros., New York.

kind of borrowing in practice as creating a permanent demand for funds. The volume of bank loans will amount at present to somewhat over thirty billions of dollars. In addition, there is always present a large amount of open or book accounts, representing temporary financing. The volume of such open market accounts or acceptances will probably reach one billion dollars at present, while call loans, used purely for purposes of carrying securities, will use from one to two and one-half billions of dollars. Much of the capital employed in short term borrowing, it is true, is created by our banking system. Yet, since we included such operations in our discussion of sources of capital, so must we include the demands for such funds in our discussion of the demand for capital.

Summary.—In the present chapter we have examined several of the more important sources from which a demand for loanable funds arises as well as the extent of such demand. It would be idle to attempt a statistical measurement of this total demand by adding the totals of each group. Such a figure, in the first place, would involve a certain amount of duplication. Furthermore, it would not be helpful in determining the rate of interest. We have made our analysis of the supply of, and demand for, capital with two things in mind. In the first place, we have emphasized the motives which underlie saving and which underlie the employment of capital. Fundamental changes in these motives have an effect on interest rates. Thus, let the thrift movement gain substantial headway and interest rates will be lower, other things being equal, than they would have been had such a movement not developed. Conversely, let a new industry develop, with extensive opportunities for the employment of capital, or, given a situation which involves the conduct of a devastating war, and interest rates will be higher than they otherwise would be, other things remaining the same.

Our second effort centered around an analysis of the amount of capital coming from certain sources and the amounts used in certain classes of undertakings. If we had accurate data as to the entire amount of capital saved during a given year and the amount utilized, the two figures must equal. The supply of capital and the demand, at a given rate of interest, equate, of course. Thus, while it is interesting to know whence our capital comes, and to what major uses it is put, there are

the forces which lie back of saving and consumption that deserve important consideration when studying probable changes in the long time rate of interest.

The student will further have been impressed with the extent to which our present economic structure is based on capitalistic methods of production, as well as the extent to which progressive development depends on the annual forthcoming of large amounts of fresh capital. It is the proper allocation of this capital to our various industries in a way that best serves the community that creates the central theme in our present study.

CHAPTER IV

THE RETURN ON INVESTED CAPITAL

Interest defined.—In the field of economics the term “interest” is used to denote the price paid for the use of capital. Interest, therefore, is that share of the total income of society which is received by the capitalist. Just why there should be a return on capital is in the main a question for the economist, yet the answer may be suggested here at least in its broad outlines. The accumulation of capital implies the exchange of present goods for future goods. For example, the man who buys a \$1,000, 5 per cent bond in 1925, which matures in 1935, has given up a definite present sum, which he might have spent for goods. In return for this, he gets the promise of \$1,000 at a distant time, plus a certain additional amount, called interest, which he is to receive in the interim. We might simplify matters somewhat if we suggested that all the future sums which he expects to receive, amounting in the present case to \$1,500, have a present value of \$1,000. This situation, of course, implies that future goods are at a discount in terms of present goods, and this is exactly the attitude taken by most individuals. The majority of people would prefer \$1,000 to-day to a like sum a year from now; or, having \$1,000 to-day, they prefer to spend it rather than to defer the enjoyment therefrom for a period of years. The accumulation of capital, therefore, involves a distinct sacrifice on the part of most individuals who save, and is stimulated only by the expectation of receiving a larger sum in the future than that given up in the present.

But why, on the other hand, should people be willing to pay a premium for present goods? A partial answer to this question has already been suggested. Capitalistic methods of production are more productive than direct methods of production. Those who have command over capital goods are able to make use of them in ways which yield a return in

excess of the amounts borrowed. Hence, they are willing, if necessary, to pay back a greater sum in the future than that borrowed at the present. It is the interplay of these two forces that gives rise to interest, and the rate which emerges may be regarded as a function of the demand for, and supply of, lendable funds.¹

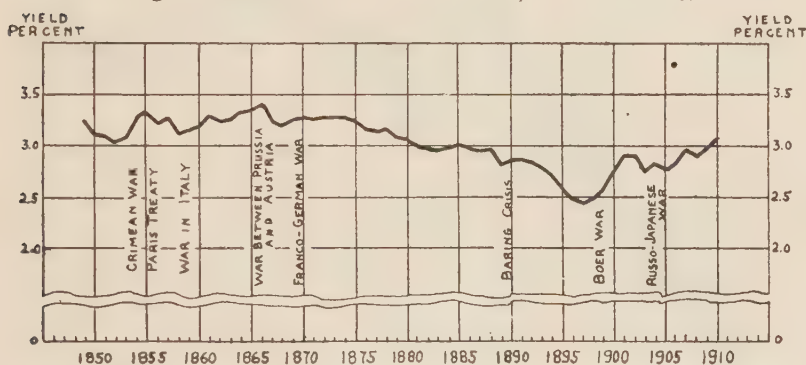
Normal, or long time, interest rates—the yield on British consols, 1849-1910.—The pure rate of interest is the price paid for the use of capital with no premium for risk. In practice, the rate of interest quoted on a given loan is generally made up of pure interest and an additional amount, which, supposedly, measures the risk involved in that transaction—the possibility that some unforeseen circumstance may arise that will prevent the borrower from living up to his part of the contract; or the difference between the pure rate of interest and the rate quoted may cover the expenses involved in handling the loan. This is true, where the loan is small in amount, or where there is an expense of administration, as in the case of small real estate mortgages. In discussing the pure rate of interest, therefore, one must consider loans which, so far as possible, are devoid of investment risk and investment cost; otherwise the apparent return which is in evidence will include not only interest but other elements of income as well.² For many years prior to the Great War

¹ There are divergent views among economists regarding the nature of interest. The Austrian school led by Bohm-Bäwerk stresses the advantages arising from indirect, or roundabout, methods of production over direct methods, as giving rise to the demand for capital, and, hence, as the essential factor in determining interest rates, although some attention, it is true, is given to the time preference which present goods enjoy over future goods. Irving Fisher, on the other hand, bases his theory of interest on the time preference of present, over future, goods, suggesting, however, that the advantages accruing from capitalistic methods of production must be considered as a factor in stimulating time preference. See Fisher, Irving, "The Rate of Interest," 1907, Macmillan Co. Professor Frank Fetter goes somewhat farther than Professor Fisher in the development of the psychological theory of interest and virtually excludes the question of productivity (in the sense just discussed) from the problem. See Fetter, Frank, "Economic Principles," Vol. I, Chapter IV, 1915, The Century Co. Taussig, Frank W., stresses the factors governing both the supply of, and demand for, capital in his theory of interest. See "Principles of Economics" (3d ed.), Vol. II, Chapters XXXVIII to XL, inclusive, Macmillan Co., New York.

² On page 58, we shall consider more fully the matter of differences in rates of return on different classes of investment in the same market to account for risk and lending costs.

British consols were considered to be as nearly riskless as any type of investment. It is true, of course, that obligations of the United States were so considered after 1880; but until that time it cannot be said that United States government bonds were regarded with as much favor as those of the United Kingdom. Consequently, a study of the yield on British consols, for the period from 1849 to 1910, ought to give us a fairly definite idea of the range of pure interest rates during the latter half of the nineteenth century, and the first decade of the present century.

Fig. 1.—Yield on British "Consols," 1849 to 1910.

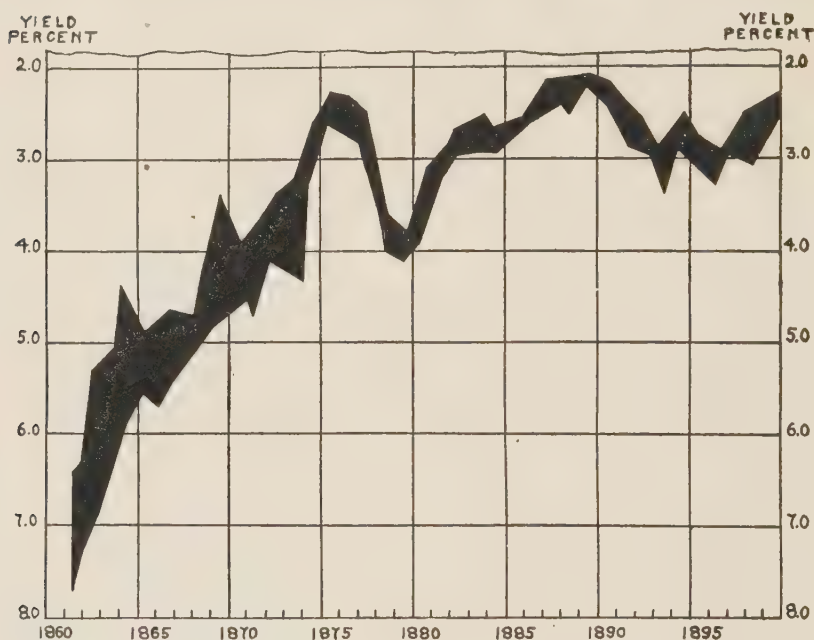


It is apparent from this chart ³ that the pure rate of interest varied, during the 62-year period studied, from 3.3 per cent to slightly under 2.5 per cent. From 1849 to 1882 the rate was maintained at over 3 per cent. From then until 1897 interest rates declined almost constantly and thereafter rose sharply until 1901. From that year until 1910 a further but more gradual rise is noted. Accompanying these long term fluctuations in interest rates are to be found fundamental changes in other aspects of our economic structure. Variations in the price level, changes in the world's supply of gold, changes in methods of conducting business, and, above all, a quickening in our entire economic life are among the phenomena that are familiar to all of us.

³ Taken from data presented in *Journal of the Royal Statistical Society*, Vol. 75, p. 399, "The Rate of Discount and the Price of British Consols," by T. D. Williams.

Interest rates in the United States.—The course of United States government bonds from 1860 to 1899 is most interesting. Starting from a low point in 1861, when the average yield thereon was as high as 7.5 per cent, the price of these obligations advanced until, in 1889, they averaged to sell at a yield but little more than 2 per cent.

Fig. 2—Course of Government Bonds in Post Civil War Period (on a yield basis).



Arens, H. F., and Bancroft, J. R., "The History of Bond Prices," *Annals of the American Academy*, Vol. 88, p. 16.

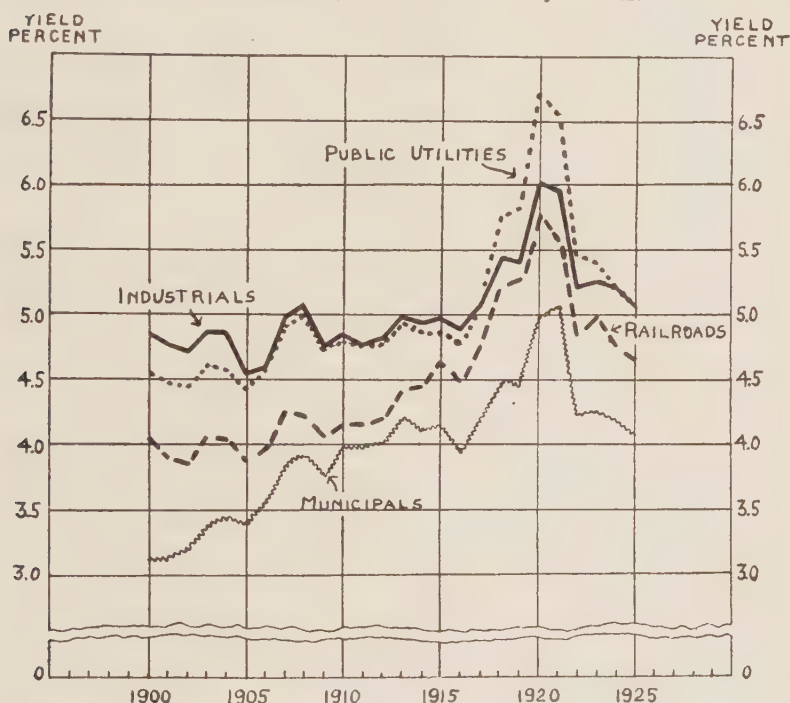
These erratic fluctuations are explained in part by the success of our civil government in the war, and in part by the introduction of a system of national banks, whereby government bonds were required as collateral to secure note issues.⁴ The rather sharp drop in price, and the corresponding advance in yield from 1877 to 1879, in contrast to the previous advance in price, was due in no small degree to the doubt raised during that period as to the ultimate resumption of specie payments and the discharge of our government debt

⁴ See Chapter XXIII.

in gold rather than in paper currency. As soon as that point was settled the price of government bonds rose sharply and the yield on such obligations dropped to a point even below the yield on British consols at that time.

The special market which United States obligations enjoyed prior to the passage of the Federal Reserve Act in 1913

Fig. 3.—Average Yield on High Grade United States, Municipal, Railroad, Industrial, and Public Utility Bonds.



Standard Statistics Service, "Annual Statistical Bulletin," 1926.

destroys somewhat their value as a barometer of true interest rates in this country. We shall present, therefore, another chart indicating the average return on four distinct groups of bonds from 1900 to 1925. We have here selected municipals, railroads, public utilities, and industrials. Municipal issues most nearly approach the riskless type, while the remaining three groups involve varying degrees of investment risk.

In this chart a continuance of the movement already noted in the chart on page 55 is in evidence. The rise from 1900

to 1909 closely parallels that which occurred in the yield on British consols, although our curve for the United States starts from a slightly higher base. Following a temporary drop from 1909 to 1910 the advance continued until 1914, which year marks the beginning of the World War. From then on forces of an unusual nature were present, which caused rates to fluctuate over a much wider range than one would normally expect. The extraordinary advance in interest rates from 1916 on, to a point well above 5 per cent in 1920, can be accounted for largely by the extraordinary amounts of capital required for war purposes. Thereafter a decline almost as rapid is noted until, at the end of 1925, yields on all classes of bonds were back nearly to pre-war levels.

The effect of risk on investment yields.—For the purpose of analyzing the course of interest rates during recent years we sought data relating to the yield of riskless securities, or, perhaps, better, securities offering the lowest possible degree of investment risk. In actual practice, however, the investor would have found, in any year during the period covered, a wide divergence in the return on different classes of investments. Not only would he have found a variation in the return on other securities in the same market, but he would have found a difference in average interest rates in different countries. Evidence of the spread that exists between different securities in the same market already appears in the preceding chart (No. 3), where the twenty-five-year average return on four different classes of securities in the United States is presented. Municipals, as a class, sold on the lowest yield basis; railroads, next; and public utilities, third; while industrial bonds, generally sold to net the investor the highest return. The differences in yield between these four broad classes of investments measures, to some extent, the market's estimate of the relative degrees of investment risk involved in each class. In other words, it is evident that investors, during most of the period studied, anticipated larger capital losses in industrial investments than in any other type, and, consequently, required a premium in the form of a higher interest return to compensate for this. Supposedly, the difference in gross return received on this class of bond over that received from a similar amount invested in municipal bonds was just sufficient to cover the capital losses suffered in the former group.

Legality and investment yields.—This would be true if the market's estimate of risk coincided with the actual losses suffered, and if no other factors entered the situation. As a matter of fact there were other factors than those related to risk that may have caused a spread in the return on these four classes of investment during the period covered; nevertheless, one is correct in assuming that the order of desirability between the groups did not differ from that already indicated. One of the most important of these outside factors pertains to the legality of various types of securities as proper investments for trust funds. Each state has its own peculiar laws defining the kinds of investments that trust funds and savings banks may purchase. For many years practically every state has had legalized investments in a rather wide list of municipal and railroad bonds; but, until recently, public utility bonds have not been so favored. In 1926, Massachusetts revised her laws in this respect and now permits savings banks and trust companies to invest in certain public utility bonds, thus raising the number of states legalizing this type of investment to ten.⁵ At the present time, many public utility bonds are unquestionably of a sufficiently high character to warrant their being legalized for fiduciary investments, and this list of states will probably be extended as soon as the practical difficulties of changing obsolete legislation can be overcome. When this takes place a continually widening market will be created for public utility bonds, and the spread between the yields on railroad and public utility securities will be further minimized.

Effect of marketability on yields: bonds of varying maturity dates.—Not only are there differences in yield between groups of securities at any given time, but there are wide variations among the yields on individual securities within these groups, which may be accounted for only in part by the credit standing of the obligor named on the bond. Consider for a moment the question of marketability. It is a well-known fact that two bonds whose risk elements are exactly equal may vary in yield, where one is more readily market-

⁵ Other states permitting investment in public utility securities in 1926: California, Connecticut, Maine, New Hampshire, New Jersey, New Mexico, Rhode Island, Vermont, and Ohio. Michigan allows investments in utilities within the state.

able than the other. Furthermore, the length of time a bond has to run to maturity will also affect its yield. During periods of high rates on short time paper, short time bonds will sell at prices which make their yield approximately the same as that found on short time commercial loans. Long term bonds, on the other hand, will sell on a somewhat lower yield basis, or at relatively higher prices, for the reason that the investor seeks such issues for the purpose of extending this favorable return for as long a time as possible. Conversely, when interest rates are especially low, long term bonds sell at prices which yield somewhat more than short term bonds. At such periods short maturity bonds are in greater demand, for investors are reluctant to tie funds up for long periods at unfavorable interest rates. This stimulates the demand for short time issues and depresses the demand for long term issues.

The following table will serve to illustrate the variations in yield that are found within certain groups of securities:

TABLE SHOWING COMPOSITE YIELDS ON LISTED AND UNLISTED BONDS OF DIFFERENT GRADES *

(December, 1925)

<i>Composite Rating</i>	<i>Railroads</i>		<i>Public Utilities</i>		<i>Industrials</i>	
	<i>Average Yields Listed</i>	<i>Unlisted</i>	<i>Average Yields Listed</i>	<i>Unlisted</i>	<i>Average Yields Listed</i>	<i>Unlisted</i>
Aaa	4.72	4.81	4.87	4.94	5.04	5.09
Aaa	4.75	4.83	4.91	5.02	5.07	5.12
Aaa	4.81	4.88	4.94	5.07	5.11	5.18
Aaa	4.83	4.92	4.96	5.11	5.16	5.21
Aa	4.95	5.03	5.11	5.24	5.37	5.47
Aa	5.02	5.09	5.13	5.29	5.41	5.52
Aa	5.06	5.13	5.19	5.30	5.46	5.56
Aa	5.08	5.15	5.22	5.32	5.51	5.61
A	5.46	5.52	5.48	5.61	5.90	6.08
A	5.51	5.54	5.52	5.66	5.93	6.14
A	5.55	5.58	5.59	5.68	5.97	6.18
A	5.60	5.64	5.63	5.73	6.03	6.21
Baa	5.91	5.96	6.12	6.14	6.74	6.78
Baa	5.84	6.02	6.17	6.18	6.81	6.83
Baa	5.93	6.07	6.19	6.21	6.82	6.91
Baa	6.02	6.11	6.24	6.28	6.87	6.94
Ba	6.64	6.72	6.78	7.03	7.40	7.53
Ba	6.71	6.78	6.82	7.09	7.47	7.54
Ba	6.73	6.84	7.01	7.18	7.61	7.60
Ba	6.81	6.88	7.13	7.23	7.67	7.72

* Adapted from "Annual Quotation Booklet," published by Pynchon & Co., New York. Composite ratings obtained by averaging those of Moody, "Standard Statistics," Poor, and Fitch.

The average yields on listed and unlisted bonds, as well as on bonds which differ in respect to credit status, are shown for each of the three groups: railroads, public utilities, and industrials.

In connection with the preceding table it is interesting to note the uniform rise in yields as one passes from the higher to the lower grades of issues. There is also a uniform difference in the yield of listed as contrasted with unlisted issues. The listing of a security does not *per se* eliminate risk, but rather indicates a more ready market. The spread between listed and unlisted issues may, therefore, be taken to indicate the premium put on marketability. We again observe the order of preference which these three groups enjoy in the minds of investors: railroads, public utilities, and industrials.⁶

Geographical variation in interest rates.—Analogous in some respects to the variations in yield found among different securities in the same market are the variations found in the rates of interest current in different countries. If there were an absolutely free flow of capital from one country to another, and if political stability were the same throughout the world, the only differences in the interest yield on investments would be those arising from the special characteristics of the securities themselves, such as the degree of risk present, the maturity of the issue, its marketability, etc. As a matter of fact, there is not a free flow of capital from one country to another. Thus, investment of funds abroad, irrespective of any other risks, involves exchange fluctuations. But, further, there is the difficulty of supervision, because of the remoteness of the enterprise, as well as the whole question of political stability in different countries. There is a natural reluctance on the part of investors to commit funds to undertakings

⁶ It is a pertinent question whether the market estimate of risk exactly measures the mathematical risk involved in different groups of investments. That is, given a large sum, would it pay the investor to select securities on which the market places a high risk, and set up out of his gross return a fund to amortize losses. If the investor were able to select his issues with such success that his actual losses were less than his anticipated losses then he would make a return in excess of a true interest return. That is, the premium for risk would more than measure the risk present. For a further discussion of this subject as well as a statistical analysis of certain trial investments see "Elements of Investment Income," Arthur Stone Dewing, *Harvard Business Review*, Vol. I, No. 3, p. 300 ff. Professor Dewing suggests the following notation in summarizing: "If 'g' represents the gross return on any investment, 'p' the pure rate of interest then prevailing, 'r' the compensation for risk, and 'e' the profit or loss due to individual business judgment, then, $g = p + r \pm e$.

in distant parts of the world where events cannot be easily and conveniently followed. For this reason, each financial market develops an interest rate of its own, within certain limits, depending on the local supply of, and the demand for, capital. Each country has its own interest rate, which usually varies from that found in other markets. Yet the spread between rates in different countries can never become very great, except in times of war, or because of other special circumstances; otherwise the inherent objections to loans in foreign countries would be more than offset by the premium on such loans.

It is, of course, entirely logical that interest rates should be lower in old and established countries than in new and growing ones for several reasons. In the first place, after capital accumulation has been going on for some time in a country, the domestic requirements become fairly well supplied and the marginal productivity of capital is lowered, that is, capital must be employed in less and less profitable ways. In new and undeveloped countries, on the other hand, the more productive uses of capital are still open and many opportunities are presented for high returns. For this reason, capital flows from older to newer communities; from communities where the marginal productivity of capital is low to localities where it is high. Furthermore, it is often true that the risks of investment are higher in new or undeveloped countries, because of a less stable government, of inadequate legal systems, or of the newness of industrial undertakings, the newness accounting for a higher return in the last class mentioned.

For many years prior to 1914 Great Britain supplied capital in large quantities to countries all over the world. The development of American railways before 1900 was materially helped by British capital, which was also invested on an extensive scale in South America, Canada, China, India, and other parts of the Far East. The promise of higher rates abroad than at home and the presence of an ever growing fund of capital were the main factors responsible for this movement.

A study of the return on various groups of investments floated in the British markets from 1888 to 1911 will serve to illustrate the point just made in respect to the higher return customarily enjoyed on investment in less developed countries during this period.

PROMISED RETURN ON HOME, COLONIAL, AND FOREIGN INVESTMENTS

(Floated in British Markets, 1888-1911) *

Year	Home Per Cent	Colonial Per Cent	Foreign Per Cent
1888	4.35	3.43	5.61
1893	2.92	4.09	5.53
1898	2.81	3.07	3.97
1899	3.44	3.27	5.11
1900	3.35	3.20	4.05
1901	3.00	3.40	5.34
1902	3.12	3.21	4.94
1903	3.44	3.21	5.77
1904	3.46	3.78	5.83
1905	3.39	3.78	4.99
1906	3.37	3.85	5.14
1907	3.61	3.99	4.90
1908	4.00	4.04	4.95
1909	3.60	3.96	4.88
1910	3.72	4.19	4.85
1911	4.61 †	4.03	4.85

* "The Rate of Interest on British and Foreign Investments," Lehfelddt, R. A., *Journal of the Royal Statistical Society*, Vol. 76, p. 196 ff.

† Three issues only.

Thus, with but five exceptions, the average promised yield on new *domestic* securities floated in British markets was lower than that on securities issued by colonial enterprises, and, without exception, the average return on domestic flotations was substantially below that promised on foreign securities during the period covered. Furthermore, the return on colonial enterprises was below that promised on foreign securities.

At the present writing a radical change is noted in the position of the United States. We are to-day a lending nation. The vast accumulation of capital piled up in this country since the War has sought employment in foreign fields, partly in the rebuilding and financing of nations devastated during the War, and partly in financing less developed nations. The same phenomenon is noticeable here that was present in the British situation before the War. Interest rates are low at home, as contrasted with the promised return on investment in German, Japanese, Italian, and South American enterprises. The failure of our domestic capital needs to grow as rapidly as capital accumulation and the promise of a substantially higher return on foreign investments have been responsible in large measure for the present development, and will undoubt-

edly continue to stimulate our interest in the field of foreign investment in future years.

Interest versus profits.—The return on invested capital is called interest in economic theory and we have accepted this meaning of the term up to this point in our discussion. Theoretically, capital is entitled to a return which is devoid of all risks and which is in no way associated with the management of enterprises, for the return allocated to the entrepreneur or business manager is known as “profits” in economic theory. We should, however, completely overlook the practical aspects of the situation if we ended our discussion at this point. We are, in fact, compelled to recognize the practical, as well as the theoretical, viewpoint of the investor. Credit instruments, such as bonds and notes, it is true, do bear fixed rates of interest; and, in respect to the return on capital invested in this type of security, we are correct in confining our discussion to a study of current interest rates. But this type of security represents only a small part of the invested capital of the country. One must consider also the large amount of preferred stocks outstanding, the return on which, although not contractual, is frequently regarded as fixed in very much the same way as interest is. In theory, the return on a preferred stock is partly interest and partly profit, since all stocks, both preferred and common, represent ownership in the corporation, yet the average investor probably regards dividends received on preferred stocks just as much a return on capital as he does the interest which he receives on bonds.

Common stocks, on the other hand, present an even more complicated problem. For not only is a part of the return received on this type of security more purely profit as contrasted with interest, but the forms in which the return may come are varied. In fact, the return on common stock investments may be received in any or all of the following ways: dividends, subscription rights, surplus accumulation, or appreciation in market value. Theoretically, therefore, as well as practically, the return on such securities appears as a participation in profits, in that it is a residual, not a fixed, claim. Yet we must consider the return on common stock, which represents the ownership equity in corporate property, in part, at least, as a return on capital similar to interest paid on bonds, even though the economist distinguishes between profits and

interest. It is at once apparent that in the remainder of our discussion we will be unable to adhere strictly to the economic distinction between profits, interest, and the return for risk.

Return on invested capital in selected groups of enterprises: industrial earnings, 1910-1913.—As one would expect, our task from now on will be somewhat more complicated than when we were discussing the pure rate of interest. At that time we were dealing with a definite phenomenon, which has long been studied and on which there is a mass of related and consistent data. In considering the return on various classes of stocks, on the ownership equity in businesses, or on the total capital investment in enterprises, where interest, profits, and a return for risk are all present in varying degree, one must be content with less satisfactory, less well-defined, and less continuous evidence. The question of procedure in developing this material also presents difficulties.

With this situation in mind, however, we shall proceed first to an analysis of the return on broad classes of invested capital, that is, the return on total capital invested in certain selected types of industry. Thereafter we can profitably take up in more detail the return on selected classes of stocks, such as preferred and common.

In a study made by the author of the rate of earnings on capital invested in industrial enterprises for the years 1910, 1911, 1912, and 1913, it was found that twenty-five companies averaged between 5.7 and 7.2 per cent on their total capital invested.⁷ This is substantially lower than one would normally expect, in view of the risks inherent in industrial enterprises. We are, however, dealing with averages which include high and low earning concerns. One of the characteristics found among industrial concerns is a wide variation in the ratio of earnings to investment. Some companies consistently earn very high rates. The Ford Motor Company, for example, was able consistently to earn throughout this period

⁷ The average return for specific years was as follows:

<i>Year</i>	<i>Average per cent Earned by 25 Cos.,</i>
1910	5.7
1911	5.7
1912	7.0
1913	7.2

well over 100 per cent on its book investment. Other companies during the same time were unable to earn a rate equal to that promised on high grade bonds. It is the *expectation* of a high return, not the existence of a given *average* return, that attracts capital into the field of industrial investment.

In another study of the profits on typical industrial companies for the years 1912 and 1913, it was shown that \$406,829,358 of invested capital earned \$55,613,659, or 13.67 per cent, after providing for all costs and expenses of management, including depreciation of plant and equipment.⁸ This study was general in nature, no attempt being made to group the companies included according to the nature of their businesses. It is also true that the average size of the companies here studied was smaller than the average of those used in the first study. It is probably true, as a rule, that, within certain limits, small, closely held corporations make higher returns than larger corporations, investment in which is widely held, and which are, therefore, subject to so-called absentee-ownership control.

Earnings of miscellaneous companies, 1917.—The average rate of return shown for industrials in the two preceding studies covering the 1910-1913 period was somewhat lower than that shown for 31,045 selected corporations studied in another connection for the year 1917. One would expect the average return on capital invested in industrial enterprises to be high in 1917, however, on account of the large amount of War business handled during that year and the rapidity with which prices advanced in 1916 and 1917. The composite result for these 31,045 corporations, based on a report by the Treasury Department to the Senate, showed a total net

⁸ Sterrett, J. E., "The Comparative Yield on Trade and Public Service Investment," *American Economic Review*, Vol. 6, No. 1, p. 4. A further analysis of the 158 reports under examination shows that, upon invested capital, in 117 cases 8 per cent or more was earned.

<i>Cases</i>	<i>Per Cent Earned</i>
97	10
86	12
70	15
44	20
28	25
17	30
10	40

income before taxes of \$4,760,933,000 on an invested capital of \$22,000,000,000, the per cent return here being 21.7.⁹ The average for all corporations, however, would undoubtedly be lower than this, for, according to Treasury reports, 119,000 corporations showed no net income at all in 1917.

These figures are given for what they are worth, although it is hard to see how they can be used as a basis for broad generalizations. As already indicated, they are based on operations during a War year and comprise only corporations which actually showed a profit.¹⁰ Furthermore, they comprise a heterogeneous group of companies in different lines of business.

⁹ See Friday, David, "Profits, Wages, and Prices," pp. 35-37, 1921, Harcourt, Brace & Co., New York.

<i>Income Range Percentage</i>	<i>Net Income before Taxes (000 omitted)</i>	<i>Invested Capital (000 omitted)</i>	<i>Percentage Net In- come before Taxes to Invested Capital</i>
under 10	\$ 477,013	\$6,250,000	7.6
10-15	389,211	3,000,000	13.0
15-20	578,015	3,400,000	17.0
20-25	566,799	2,600,000	21.8
25-30	324,599	1,200,000	27.0
30-35	301,186	1,000,000	30.1
35-40	389,700	1,100,000	35.4
40-50	1,189,719	2,700,000	44.1
50-75	293,185	500,000	58.6
75-100	133,416	150,000	89.0
over 100	118,152	100,000	118.1
Total	<u>\$4,760,933</u>	<u>\$22,000,000</u>	<u>21.71</u>

¹⁰ The following table, taken from "The Course of Profits During the War," by Bruce D. Mudgett, *Annals of American Academy*, May, 1920, p. 148 ff., will serve to illustrate the extent to which industrial profits advanced during the War period:

RATE EARNED ON INVESTED CAPITAL DURING PRE-WAR AND WAR PERIODS

(Selected Industrials)

	<i>U. S. Steel</i>	<i>Gloss Sheff. Steel</i>	<i>Lacka- wanna Steel</i>	<i>Cruc- ible Steel</i>	<i>Beth- lehem Steel</i>	<i>Rep. Iron and Steel</i>	<i>Ry. Press Steel Spring Car</i>	<i>Am. Loc.</i>	<i>N. Y. Air Brake</i>	<i>West. Air Brake</i>	
Pre-war Period (1910-1913)...	6.8	3.0	4.3	5.6	7.1	4.3	4.6	4.4	5.7	5.4	17.3
Total War Period	12.2	6.5	14.9	15.7	32.5	12.8	8.6	6.0	8.8	23.4	24.4
U. S. Neutral Period	11.3	4.8	10.2	14.9	41.7	10.7	5.8	4.9	8.9	31.3	21.2
U. S. Belligerent Period	13.5	9.1	22.0	18.1	18.7	16.0	12.9	8.6	8.5	11.5	34.1

This last objection, however, has been overcome, to some extent, in that 30,892 of the companies listed have been grouped into 5 selected classes and the average rate earned by each class on capital invested shown separately. The results of this study are shown in the following table:

PERCENTAGE OF EARNINGS TO CAPITAL OF 30,892 CORPORATIONS
(For 1917)

<i>Percentage Net Income to Capital</i>	<i>Financial Corpora- tions</i>	<i>Railroads and Public Utilities</i>	<i>Transpor- tation by Water</i>	<i>Agricul- tural</i>	<i>Manufactur- ing and Mining</i>
Under 10.	23.3%	78.2%	2.8%	14.3%	2.4%
10-20	63.9	20.6	1.9	30.2	19.6
20-30	10.8	1.1	7.2	20.0	20.7
Over 30	2.0	0.1	88.1	35.5	57.3

From these data for the year 1917 it appears that the lowest rate of return was found in the railroad and public utility group. A partial explanation of this situation undoubtedly lies in the fact that both of these industries are regulated as to the rates that they may charge and the conditions under which they may render service. Not only did this situation apply to public utilities at this time, but particularly to railroads doing an interstate business and coming under the control of the Interstate Commerce Commission. A study of railroad rates from 1910 to 1920 will show conclusively that they failed to advance anywhere nearly so rapidly as prices. With rapidly increasing operating expenses, therefore, one would expect a decreasing return in this industry during this period. In the case of public utility enterprises, an 8 per cent rate is frequently allowed on the fair value of property used for public service, although not infrequently the rate allowed is lower than this. Even in those cases where a conscientious effort is made to allow rates which will yield the public service corporation a fair return, such corporations are at a distinct disadvantage during periods of rising prices. There is an inevitable delay in the legal processes which must be experienced in order to obtain sanction for new rates, and this prevents the utility from advancing its rates as fast as the prices of materials and labor increase. Particularly during a period of advancing prices, therefore, would one expect the rate of profit of such corporations to be lower than that found in many industrials.

Recent tendencies in industrial earnings.—In normal times one might also argue that the rate of return on capital invested in railroad and public utility enterprises should be lower than that found among industrials, on account of the low risk in the former type of enterprise as compared with the latter. To a certain extent this is true. Surely there are some industrial concerns that average to earn very high rates on their invested capital. The successful motor car companies during the years 1922 to 1926 frequently earned over 20 per cent, as shown in the following table:

RATE EARNED ON BOOK VALUE OF TANGIBLES

	1922	1923	1924	1925	1926
General Motors	13.5	15.0	10.6	22.9	29.8
Packard	5.6	15.0	10.7	31.3	34.1
Studebaker	22.8	20.8	14.7	17.2	13.1

Contrasted with this situation we have the steel industry, in which the rate of earnings on invested capital for 1925 was but little over 5 per cent. Had we a compilation showing the return in 1925 and 1926 on capital invested in the cotton textile industry our results would be even more disappointing. Thus, while some industrial companies and some lines of industrial undertaking show much higher returns under normal conditions than are to be found among public utilities, other industrials may fail for years to show any return at all. Probably the *average* rate of earnings to invested capital for a large group of industrials during normal times would not substantially exceed the average return on capital invested in railroad or public utilities, despite the higher risk found in the former type of undertaking. We are led to the assumption, therefore, that capital is attracted to industrials, not because of a high average return, but because of the possibility of a high return in particular instances.¹¹

Earning power of capital of railroads and utilities.—Whatever may be said of the average earning power of industrial corporations, it is true that a much more constant rate of earnings is maintained by both railroad corporations and pub-

¹¹ We are dealing here with the return on the "book" investment, that is, the rate earned on the investment as carried on the books of the company. The value placed on this by the investor through the prices paid for the corporation's securities is another matter. This is discussed subsequently on p. 76.

lic utilities. In other words, there is a far greater stability of return among such corporations than among industrials. This stability is due in part to the control exercised over rates and charges as already suggested, and in part to the nature of such enterprises. Competition, ever present in the industrial field, is supplemented by regulation in the public utility field. There is little to fear from style changes, or changes in popular tastes and fashions. The problem of obsolescence is minimized, and the services furnished by utilities are of a necessary character and are purchased in much the same quantity whether times are good or bad. Thus, even though government control and regulation of rates may for a time operate to the disadvantage of utilities, on the whole, such regulation results in much greater stability.

Complete data are available to show the average return on capital invested in railroad enterprises of this country for many years. The following table, supplementing the 1917 figures already shown, records the per cent earned on the aggregate value of railroad property for fifteen years.

EARNINGS ON INVESTMENT IN RAILROAD PROPERTY IN THE UNITED STATES *

(1910-1925)

<i>Year Ended</i>	<i>Investment (000 omitted)</i>	<i>Net Railway Operating Income</i>	<i>Return on Investment (per cent)</i>
June 30:			
1910	\$14,557,816	\$805,097	5.53
1912	16,004,745	727,458	4.55
1913	16,588,603	806,801	4.86
1914	17,153,786	674,190	3.93
1915	17,441,420	694,276	3.98
1916	17,689,425	1,002,935	5.67
December 31:			
1916	17,842,777	1,058,506	5.93
1917	18,574,298	950,557	5.12
1918	18,984,756	646,223	3.40
1919	19,300,121	454,132	2.35
1920	19,849,320	12,101	.06
1921	20,329,224	601,139	2.96
1922	20,580,168	769,411	3.74
1923	21,372,858	974,918	4.56
1924	22,182,267	984,463	4.44
1925	22,736,993	1,136,728	5.00
1926	(Commercial and Financial Chronicle estimates return at 5.35%)		

* U. S. "Statistical Abstract," 1926, p. 385.

Fluctuations in earnings are recorded over this period to be sure, but they are not marked. The most significant change within recent years was the gradual decline in earning power from 1910 to 1920 and the rise thereafter. The juncture of circumstances causing these changes has already been alluded to. Prior to 1920 the Interstate Commerce Commission had a veto power over all changes in railroad tariffs. It is true that the railroads have always had the right to apply to the courts for relief against rates so low that an adequate and fair return could not be earned on a fair market value of the property used for railroad purposes. Yet, during the period of rising prices from 1910 to 1920, rate changes always followed advancing costs. In 1920, however, a new transportation act was passed by which the Interstate Commerce Commission was empowered to establish rates within limits that would allow a fair return on the aggregate value of property used by the roads for public purposes.¹² A return of $5\frac{3}{4}$ per cent is now regarded as fair for such purposes, although the recapture clause does not operate until earnings exceed 6 per cent. Since the passage of the act of 1920 a continuous advance in earning power has taken place, due in part to the more generous attitude of the Commission in respect to rate advances, but more especially to a continuous decline in commodity prices and sustained business activity. One might summarize the situation in respect to this industry by stating that a return of between 5 and 6 per cent on invested capital is probably normal. During periods when economic factors are adverse, the return may be expected to fall below 5 per cent, while, during periods especially favorable to railroad operation, a return of over 5, but under 6, per cent may be anticipated.

Public utility earnings.—The situation at present in respect to public utilities is akin to that found in the railroad industry in certain particulars, but it differs in other particulars. It

¹² Transportation Act, 1920, Section 15a. The original act provided for 6 per cent total return. On May 27, 1920, the Commission declared that $5\frac{3}{4}$ per cent should be considered a fair return. This does not apply to a particular road, but to rates for an entire territory. In cases where the rates necessary to provide an average return of $5\frac{3}{4}$ per cent enables a given carrier to exceed this figure, the government, under the 1920 Act, may recapture 50 per cent of excess earnings.

has already been suggested that public utilities are subject to commission regulation in the matter of rates and service. In fact, nearly every state in the Union now has some form of utilities commission. It is true, however, that the attitude of the courts and commissions in respect to rates has been somewhat more liberal than in the case of our steam roads. Whereas, the return on invested capital is technically limited to 6 per cent in the latter case, public utilities are frequently allowed to earn between 7 and 8 per cent.¹³

In practice, also, the return on capital invested in so-called public utility enterprises probably exceeds the return earned on capital invested in railroad corporations. In 1922, the last year for which adequate data are available, the total aggregate value of the property account of central electric light and power stations was \$4,465,015,691. Total income available for charges may be estimated at \$376,800,000 for the year, thus indicating a rate of return of 8.44 per cent. Similar figures for telephone companies show \$1,742,323,906 of invested capital, \$135,008,000 total income, and a return of 7.75 per cent thereon.¹⁴ The net capitalization of electric railways in 1922 amounted to \$5,446,795,547, whereas gross earnings available for charges were \$233,827,000. The approximate ratio of earnings to capitalization was thus 4.3 per cent.

Recent earnings of national banks.—Recent data showing the return on capital invested in national banks are available from the reports of the Comptroller of the Currency. For the six years, 1921 to 1926, inclusive, the average ratio of earnings to total capital funds for all reporting banks was 7.26 per cent. The lowest average annual rate was 6.45 per cent, while the highest appeared in the year 1926, when 8.07 per cent was earned.

¹³ For a list of decisions bearing on the question of a fair return for utilities see p. 368.

¹⁴ These data are obtained from Moody's "Manual," 1927. Fixed charges were reconstructed on the assumption that there were \$2,987,925,000 funded debt in the case of electric light companies and \$697,172,300, in the case of telephone companies (the amounts estimated in Moody's "Analysis," 1927). An average charge of 5.5 per cent on both amounts was assumed by the author. The resulting charges were added to net income in order to approximate the total income earned on the total investment.

TABLE SHOWING INVESTED CAPITAL AND EARNINGS

(National Banks 1921 to 1926)*

<i>Year Ended</i>	<i>Total Capital Funds</i>	<i>Earnings</i>	<i>Per Cent Earned on Capital Funds</i>
1926.....	\$3,089,400,000	\$249,167,000	8.07
1925.....	2,970,000,000	223,900,000	7.54
1924.....	2,916,200,000	195,700,000	6.71
1923.....	2,875,700,000	203,500,000	7.08
1922.....	2,848,439,000	183,670,000	6.45
1921.....	2,795,648,000	216,106,000	7.73
Average.....			7.26

* Computed from data given in Moody's "Banks and Finance" manual for 1928, p. viii. In an article prepared by Paul Gourrich, "Analysis of the Banking Economy of New York City," appearing in the *Annalist*, Dec. 25, 1925, it is shown that 14 selected national banks in New York earned, in 1925, 13.2 per cent on capital and surplus; 9 trust companies averaged 9.6 per cent, and 6 state banks earned 11.8 per cent.

The average capital invested in banking enterprises has, during recent years, shown an earning capacity substantially in excess of the return on capital employed in transportation, and about equal to the return in public utility enterprises. Although not controlled to the extent that public utility and railroad enterprises are, the banking field probably enjoys as low an investment risk as the former.

Our discussion might be continued to include the return on other broad classes of capital; but enough has been said, at least, to enable us to make certain generalizations. In the industrial field, which embraces manufacturing, mining, and merchandising concerns, we find the highest returns and the widest variations between enterprises. The average, or normal, return, if such may be said to exist, apparently does not exceed that found in the public utility or railroad group. The attractions held out by industrial investments arise from the possibility of high profits, where the enterprise is successful, and from a minimum of public regulation. The chance of a high return apparently offsets the inherent risks of this class of investment. Public utility enterprises and railroads are regulated in respect to rates and embody less investment risk in general than do industrial enterprises. The average return on capital invested in such enterprises will run from about 5 per cent in the case of railroads to 8 or 9 per cent in the case of electric light and telephone companies. In the case of financial institutions, particularly banks, the return is

about the same as that for utilities, averaging slightly under 10 per cent.

The return on stocks.—There remains one more aspect of the problem to be considered. It will be recalled that we started our analysis of the return on invested capital by considering interest rates. Thereafter we considered the return on total invested capital in certain enterprises. The two concepts are the same in some respects, but different in others. The essential difference lies in the distinction between interest and profits. Interest is a return on capital pure and simple, while the aggregate return which we subsequently studied embodies interest and profits. Or, looked at in another way, any typical enterprise will distribute the total return earned on its invested capital partly in the form of interest to those contributing capital to the enterprise and partly as profits to those who assume the risks of the business by making capital contributions as owners and not as creditors. We come now to the last form of distribution, that is, the return to the owners of the business—the stockholders. In other words, what return may the investor expect as a stockholder in an enterprise, or as an owner, in contrast to the return he might expect if he were a creditor, or a bondholder? This question will be taken up first in respect to preferred stocks and later in respect to common stocks.

Yield on preferred stocks.—Although differing fundamentally from the bondholder in theory, the preferred stockholder in practice occupies a position almost identical to that of the bondholder. The return which he receives is, it is true, a participation in profits and not an assured or promised return. Yet his return, except in the case of special classes of preferred stock, is limited to the rate of dividend specified in the stock contract. The only assurance that he will receive any return at all comes from the financial condition of the business, there being no promise on the part of the corporation to pay the dividend specified. Yet, the practical aspects of the situation so far outweigh the theoretical that preferred stocks sell strictly on a yield basis except when dividends are in arrears, or where the financial condition of the company is such as to jeopardize the continuance of the dividend. That is, as a class, the same factors that govern the return on bonds likewise govern the return on high grade preferred stocks. The

return on either type of security is regarded as interest by the investor.

We may, therefore, conclude our discussion of preferred stocks with two observations.

1. If a preferred stock could be found which was absolutely devoid of risk it would sell to yield the same return to the investor at any given time as a long term, high grade bond. The only difference between the two types of security would be that the bond would probably have a maturity date, whereas the stock would not.

2. In practice, however, preferred stocks generally have somewhat higher investment risks than bonds, and hence sell at yields somewhat in excess of those shown for bonds. Usually high grade preferred stocks sell to yield from $\frac{1}{2}$ to 1 per cent above the yield of high grade bonds in the same type of industry, and this spread is maintained as one descends to the lower types of bonds and stocks.¹⁵ The additional yield, therefore, which the preferred stockholder receives over the bondholder is in the nature of a premium for risk and not, per se, a return for the use of capital.

Return on common stock investments.—The common stockholder is the real owner of the enterprise and his return, theoretically as well as practically, includes a larger element of profit than that of other classes of security holders. In considering the return on common stocks one might proceed by comparing earnings to the par value, or to the book value of the stock, yet such a comparison would be of little practical value. The real interest of the investor centers on a comparison of the market price of the stock with the "earnings available" therefor. It should be noted that earnings and not dividends are here considered, for the reason that all earnings of the corporation, whether reinvested in the business or paid out as dividends, actually belong to the common stockholder. Where they are reinvested in the business instead of being paid out as dividends, to that extent is the value of the equity behind the stock increased. Ultimately the common holder should get this return either in the form of a larger current dividend

¹⁵ The average yield on ten public utility preferred stocks rated A or better by Moody was 6.11 per cent during the last week of 1925 as contrasted with a yield on high grade public utility bonds of about 5 per cent, the difference here being slightly over 1 per cent. See also p. 210.

rate, or of an appreciation in the value of his holdings, or of both.

A comparison of the market price of common stocks with earnings available will indicate, therefore, the real return which the investor receives. In this way only can we reduce to simple terms the current return which he is able to command by the commitment of funds in this type of investment. It is also true that such a study goes somewhat farther than did our previous discussion of the rate at which capital invested in various enterprises is able to earn, for in that study we confined ourselves to a comparison of earnings to the book value of the investment. The market value of the investment in an enterprise may, at any time, and generally does, vary from the book value of the investment. The mere fact that the railroad industry earned but 5 per cent on invested capital in 1925 does not mean necessarily that the purchaser of common stock in a typical railroad company would have paid par for such an investment and been content to receive a 5 per cent return. As a matter of fact, a study of market prices of stocks will prove conclusively that the investor often expects and demands a return on his investment in excess of the rate which the book value of his investment is able to earn. In other words, the market value of stocks is often below book value, but not necessarily so.

In contrast with our previous discussion as to the rates earned on the book value of railroad and industrial investment, let us compare the rate of earnings on the market value of ownership equity therein as evidenced by stock prices. The following table ¹⁶ will show the return on railroad and industrial common stocks based on average market prices, for the years 1922 to 1925, inclusive:

RATIO EARNINGS TO MARKET PRICES—20 RAILS AND 20
INDUSTRIALS

RATIO EARNINGS TO MARKET VALUE

<i>Year</i>	<i>Rail Stocks</i>	<i>Industrial Stocks</i>
1925	10.76%	8.95%
1924	10.91	8.57
1923	14.40	13.27

¹⁶ Taken from *Wall Street Journal*, October 21, 1925.

Contrary to what one might expect, industrial stocks during these three years sold on a higher multiple of earnings, or at a lower capitalization rate, than did railroad stocks. The probable explanation of this discrepancy lies in the attitude of investors toward the railroads at that time. The experience with government operation during and succeeding the War had not been forgotten, and there was still doubt as to the ability of the railroads to maintain the then existing rate of earnings.

The market prices of securities, particularly common stocks, are subject to wide and sometimes erratic changes. Industrial earnings likewise vary greatly from year to year. With such instability in the two factors of the equation it is reasonable to suppose that the per cent of earnings to the market price of common stocks will likewise fluctuate rather widely from year to year, and that the ratio will also tend to fluctuate between different groups of companies in the same year.¹⁷ For example, the average return on a group of selected industrials, during the period 1915 to 1925, inclusive, varied from 4.34 per cent in 1921 to 28.01 per cent in 1917. The return by years is shown in the table given below.

TABLE SHOWING AVERAGE DIVIDEND YIELD AND RATIO OF EARNINGS TO MARKET VALUE—INDUSTRIALS *

(1915—1925)

<i>Year</i>	<i>Dividend Yields on Highest Monthly Av.</i>	<i>Earned on Market Price</i>
1925	5.76%	9.68%
1924	6.32	11.58
1923	7.11	12.30
1922	6.06	8.70
1921	7.70	4.34
1920	6.95	12.06
1919	6.29	11.89
1918	11.72	20.00
1917	12.05	26.73
1916	7.92	28.01
1915	4.80	13.19
11 Year Average.....	7.52%	14.41%

* Data taken from the *Wall Street Journal*, October 20, 1925.

¹⁷ In a study of twenty representative industrial companies made by the author, covering the years 1913, 1919, and 1924, it was shown that the ratio between earnings and the market value of total ownership equity, including both common and preferred stocks, was respectively, 8.38 per cent, 12.37 per cent, and 9.64 per cent.

This would indicate that the market price of industrial stocks has shown an average cash return of around $7\frac{1}{2}$ per cent for the eleven years studied, but that the ratio between market prices and earnings has averaged nearly two times this, or 14.41 per cent. This conforms closely with other studies made by the author, covering the relation between the earnings of industrials and the market value of their stocks.¹⁸ During 1926, 1927, and the first half of 1928, the high average prices of industrials has, in many cases, unquestionably reduced the ratio of earnings to market values below the average figure just suggested. During this period many industrial stocks sold at from 12 to 20 times annual earnings.

In 1925, the ratio between earnings and the market price of public utility stocks averaged around $8\frac{1}{2}$ per cent, where earnings were taken after depreciation. In other words, public utility stocks were selling at about twelve and one-half times their net earnings after depreciation.¹⁹ Common stocks of rail companies were selling at about ten times earnings per share, as previously shown.

We have no inclusive data relative to bank stocks at hand; but figures compiled on New York bank stocks for the year 1925 would indicate that they were selling at a higher price, in relation to both dividends and earnings, than any of the classes of stock so far studied. See table following.

AVERAGE DIVIDEND YIELD AND RATIO OF EARNINGS TO MARKET VALUE

(New York Bank Stocks, 1925)

<i>Class</i>	<i>Dividend Yield on Market Price</i>	<i>Earned on Market Price</i>
National Banks	2.64%	5.6%
Trust Companies	3.44	5.5
State Banks	3.29	4.7

¹⁸ See Badger, R. E., "Valuation of Industrial Securities," p. 122, 1925, Prentice-Hall, Inc., 70 Fifth Ave., New York. "If one were to make any general summary on the basis of these data he would probably come to the conclusion that investors, during the past ten years, at least, have insisted on a ratio of earnings to the prices of common stocks of industrial concerns ranging between 10 per cent and 30 per cent, but, normally, running over 15 per cent."

¹⁹ For further discussion of the basis on which public utility stocks sell see Chapters XVI and XVII.

It may seem strange that bank stocks should sell on so low a basis both in respect to current dividends and earnings. The full explanation of this situation requires a fairly intimate knowledge of the nature of the business which banks conduct and their close connection with the financial operations of the community. The extent to which a given bank can expand its operations is determined by the amount of its capital and the amount of business which can be developed in the locality it serves. In communities that are growing at a satisfactory rate the banks therein grow more or less automatically with the community. Each year additions to capital are made through reinvestment of surplus and possibly through assessments on stockholders. This growth, however, results in constantly growing earnings and hence a higher value on the shares of the business. The current prices of bank stocks, therefore, may be said to anticipate future growth rather than to discount present earnings. Through the purchase of bank shares the investor is really purchasing a "call" on the future growth of the community.

Summary.—In the present chapter the return on invested capital has been treated under three major heads. We first considered the yield on selected types of high grade bonds and found that interest rates, as indicating the contractual return on invested capital, have fluctuated during the past seventy-five years from around $2\frac{1}{2}$ per cent to over 5 per cent. We next considered the return on the aggregate capital invested in various types of enterprises. The aggregate annual return on capital invested in the railroad industry in this country has ranged from under 4 per cent to slightly over 5 per cent during the past twenty-five years. In public utility enterprises the return averages somewhat higher, probably from 8 to 10 per cent. About the same rate of return was noted for selected groups of banks. Industrial earnings vary greatly among industries and individual concerns. Although averaging as low or possibly lower than public utilities, industrials do, nevertheless, offer an opportunity for high profits.

The final question considered was the relation between earnings and the market return on various classes of stocks. Preferred stocks were regarded in much the same light as bonds. In the case of common stocks, however, the market expresses the return required in various industries to attract

new capital. Thus common stocks of electric light and power companies during recent years have sold at about 12 times their earnings, or on an 8.3 per cent basis. Railroads and industrials have recently averaged to sell at about ten times their earnings, while bank stocks have sold at substantially higher prices than any of the other groups. These averages vary from time to time in accordance with general market conditions and, furthermore, will vary widely in different companies. The general picture only has been given at this time. Subsequently we will consider in more detail the ratios that may be expected in specific cases.

CHAPTER V

DETERMINATION OF AN INVESTMENT POLICY

To many individuals the act of investment simply consists of selecting and purchasing conservative securities. There is no effort on the part of such individuals to study the particular circumstances surrounding the beneficiaries of the funds at their disposal nor to construct definite policies to guide themselves in the administration of such funds. It is unfortunate that this situation should exist in so many cases, for, without a definite and constructive investment program, it is impossible for one to secure the maximum benefits from the capital funds at his disposal. This is true, not only in cases where the individual is managing his own funds, but equally true where he is managing the funds of a trust, a bank, an insurance company, or a corporation. The first step in the investment process, therefore, should be the mapping out of a definite policy.

Definite policy, how determined: problem of the business man.—The particular plan or program to be adopted in a given case will depend on the circumstances which surround the owner or beneficiary of the fund at issue, or the purposes for which the fund has been set up. The truth of this statement will be better appreciated if we consider briefly the situation as it presents itself in respect to certain types of funds. Let us suppose that a young business man has reached that point in his career where he finds it possible to save a few thousand dollars annually. His present salary is sufficient to meet all current needs, so that he is not dependent in any way on his investment income. His ultimate purpose is, of course, to build up an estate sufficient to support himself in old age and to provide for his family at death. What broad policies should he adopt in this investment plan?

Functions of life insurance.—His first step should be to contract for enough life insurance to support his family, in the

event of an untimely death. The amount of insurance that he can carry will depend on his income, it is true; but at least 25 per cent of his savings should be allocated to life insurance. If his annual savings amount to \$4,000 at thirty-five years of age, this will enable him to carry about \$40,000 of straight life insurance. In this way he has created an estate, so to speak, at the start of his career. This should be built up as rapidly as possible until his total life insurance amounts to between \$75,000 and \$100,000. At this point he has provided for his wife and children regardless of what happens to himself or the other funds he accumulates. There are many different types of life policies, but the two most common are the so-called endowment policy and the straight life policy. Under the endowment policy the annual premiums are higher, but at the end of a definite period, usually twenty years, the policy is fully paid and has a surrender value equal to the face of the policy. The straight life policy, in contrast to the endowment policy, requires the payment of premiums during the life of the insured. In case the insured elects to allow his dividends to remain with the company, however, his policy becomes paid up at the end of about twenty years, depending on the dividend policy of the company. In either case, the policy has a definite surrender value, which increases with the number of years it has run, against which the insured may at any time borrow.

The endowment policy just referred to is designed for the person who wishes to combine saving with protection. The annual premium cost of a thousand-dollar, twenty-year endowment, therefore, is so determined that, at the end of twenty years, the insured will have a sum of \$1,000 due him, whereas, if he dies in the meantime, the death claim will also be a like sum. The premium cost of a straight life policy is so arranged that only the cost of protection is included. Hence, if the insurance company succeeded only in attaining its expected mortality and rate of earnings on invested capital, the insured would be required to pay premiums until he died, or reached the age of actuarial death. The facts, that most companies experience an actual mortality rate less than that expected, and are able to invest their funds at more than the actuarial rate of interest, enable them to pay dividends to their policyholders.

The question is raised, from an investment standpoint,

whether the purchase of an endowment policy is a good method of saving. The answer will depend on the return which the investor expects on his funds. Insurance companies, although computing their premiums on an assumed rate of interest of $3\frac{1}{2}$ per cent, generally average to earn somewhat better than 4 per cent. If the insured is content with a compound interest rate of between 4 and $4\frac{1}{2}$ per cent, depending on the company, then endowment insurance is a good method of saving.

Life insurance is coming to be more thoroughly appreciated as a vehicle for investment. It should be the first investment contract made by the young man. In this way he is able to create an estate at the beginning of his career; he obligates himself to definite annual payments; and the value of his living estate increases annually at a rate in excess of these annual payments.¹

The part played by bonds.—What should be his plan for the remainder of his funds? What types of investment best fit his requirements? Should he purchase all bonds, or all stocks? Here, again, the answer to these questions will vary to some extent with individual cases; but let us assume a typical case, if such exists. It is generally wise for any investor to allocate a portion of his funds to the purchase of high grade bonds, the most secure bonds that can be purchased, with a reasonably ready market. One third to one half of our hypothetical investor's free funds should, normally, be devoted to the purchase of such obligations. In this way he lays a foundation for his living estate. He is building up a fund in riskless investments, yielding a low return, to be sure, but yielding, nevertheless, a sure return, which some day may prove a veritable life saver. Such investments, furthermore, may always be turned into cash without substantial loss in principal value.

¹ There are many other types of insurance that may be used for investment purposes. Among the most important of these is the annuity. It is possible for a man at the age of thirty to purchase an annuity of \$1,200 a year, beginning at the age of sixty, by the annual payment of \$192.50, or a deferred annuity may be purchased on the single payment plan. A sum of \$2,977 at the age of thirty will purchase a deferred annuity of \$1,200, annually, at the age of sixty. These annuities may be so adjusted that the entire sum paid in, plus a minimum rate of interest, will be paid out to the man's estate in case of death, before he has realized an adequate amount of annuity payments.

Common stocks.—Another portion of his funds may profitably be allocated to the purchase of high grade common stocks. In entering this field, the investor is opening to himself opportunities for the greatest profits, but he is also subjecting himself to the risks of large losses. There is no common stock which does not carry with it the risk of a substantial shrinkage in principal value. On the other hand, out of a group of well selected common stocks a majority will inevitably advance in value over a period of years. This situation may be stated in a somewhat different fashion. Let any one who has made a reasonable study of investments select the twenty common stocks which, in his judgment, seem the best. Any one of these stocks may go down in value; but, if the selection is made with any judgment at all, the combined value of the twenty should go up over any given ten-year period.² This situation enables us to lay down a definite rule for investing in common stocks. Diversify purchases over a wide range of companies and industries, always endeavoring to select the leading stocks within the industrial group.

It is assumed in the preceding paragraph that the investor is not endeavoring to get trading profits, but is interested in purchasing stocks outright purely for investment purposes. The technique of trading is essentially different from the science of investing. The former is an art, and is not an integral part of the present subject.

Current versus future income.—In the selection of common stocks it is necessary to consider whether present income is desired, or whether present income may be sacrificed in the interest of a future appreciation in principal. There are companies which pay very small current dividends on their common stocks, but which plow back into the business a large portion of their earnings. This has been especially true of the larger chain stores during the past ten years. Such a policy is desirable so long as the funds so employed can be advantageously utilized in the business. The stockholders get a low immediate return on the basis of the cash dividends they receive, but over a period of years they will inevitably realize a substantial increase in the value of their equity if the concern is operating successfully.³ The question, Why should the

² This matter is further discussed in Chapter XI.

³ This subject is further discussed on p. 312.

company not pay out large dividends and secure the necessary funds for expansion by borrowing or by issuing more stock? might reasonably be asked. This is an alternative, to be sure; but if this policy were adopted the increased earnings would have to be distributed over a larger capital investment, so that the original equity, now thinned by the introduction of new capital from without, would not advance anywhere nearly so rapidly in value. Where the corporation expands on the basis of its own earnings retained in the business, it is possible, with successful management, to make a small initial investment grow into an ultimate investment of very high value.⁴

There are certain types of businesses which are peculiarly susceptible to this policy. Chain store companies, banks, and insurance companies, under proper management, will show a tendency to grow with the increase in population and wealth of the community they serve. The trend of growth in such companies is perhaps more certain than in the case of typical industrials which are susceptible to style changes and more severe competition. Urban real estate is another type of investment offering to the owner an opportunity for profit through community growth. On all of these investments the current return will be found low in relation to the selling price of the investment. We have already noted the situation in respect to bank stocks. Insurance stocks likewise sell very high in relation to their current earnings and dividends, the ordinary yield thereon averaging between 2 and 4 per cent.⁵ Chain store stocks likewise have sold during the past five years on a much higher multiple of earnings than public utilities, the multiple running as high as twenty in some cases.⁶ The manner in which appreciation takes place in certain kinds of stocks is aptly illustrated by the diagram on page 86, showing the growth in earnings of the Woolworth Company. Starting with an earning capacity of slightly over \$10 a share in 1914,

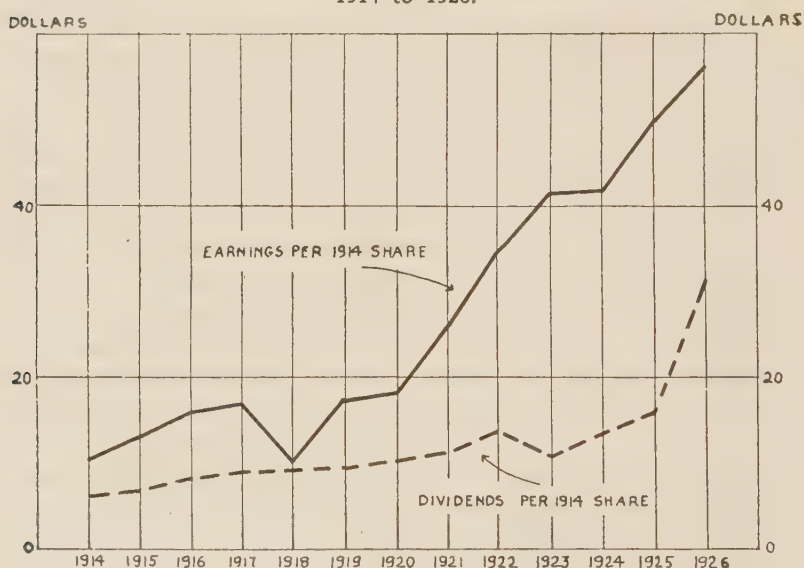
⁴ One outstanding example of this very thing is the history of the Ford Motor Company. The original capital of this company in 1903 was \$28,000. The company has never borrowed additional capital, nor has it ever sold additional stock. As a result of stock dividends the capital was subsequently increased to \$2,000,000. The present value of the company is variously estimated at between \$750,000,000 and \$1,000,000,000. In 1919 the minority stockholders sold out to Henry Ford at \$12,500 a share.

⁵ See Chapter XX.

⁶ S. S. Kresge stock, in 1925, sold at \$800 a share with earnings of about \$40 a share and current dividends of only \$8 a share.

the company has so expanded out of earnings that it was able to show nearly \$60 a share in 1926. During this period the company retained on an average over 50 per cent of its earnings in the business. Thus, while the stock has always sold to yield a small cash return, the investor has been handsomely rewarded by the large appreciation in the principal value of his holdings, this being determined by the capitalized value of a growing earning power. High grade urban real estate, such as stores, and office buildings, often sell to yield from 8

Fig. 4.—F. W. Woolworth Company, Earnings and Dividend Record, 1914 to 1926.



to 10 per cent only in terms of gross income. That is, such properties sell at from 10 to 12 times their gross rentals before taxes, interest, repairs, depreciation, or management expenses have been deducted.

For the investor who chooses to forego present income in return for an appreciation in the ultimate value of his investment, stocks in companies which have a high earning power on invested capital, which have demonstrated a consistent growth, and which pay a small per cent of total earnings out as dividends will often show a favorable ultimate return, even though purchased at prices which seem high in relation to current earnings and dividends.

Discount bonds as a means of saving.—A modification of the preceding plan may be put into effect through the purchase of discount bonds, provided the investor uses only the current income, or coupon interest, and allows the appreciation which takes place in the value of the bond to accumulate as principal. The appreciation in the value of a "discount" bond may be of two sorts: normal appreciation in value as the bond approaches maturity; and appreciation due to an improved market position. A clear understanding of these two types of appreciation in bond values is necessary to the student of investments and may be explained briefly at this point, although the principles involved are taken up in greater detail in Chapter XXVII, which deals with the mathematics of investments.

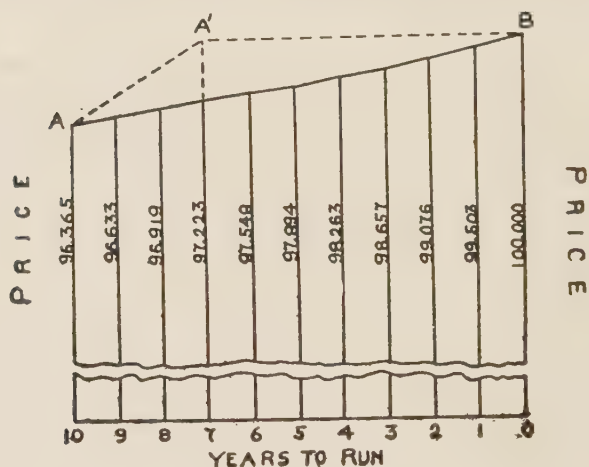
That the man who purchases a ten-year bond, bearing a 6 per cent coupon rate, at a price of \$96.365 will receive a return on his commitment in excess of 6 per cent is obvious.⁷ If there were nothing to consider except the fact that he receives \$60 a year on \$963.65, his return would be in excess of 6 per cent. In addition to his coupon rate of interest, however, which is \$60 a year, he will receive at the end of ten years a principal sum of \$1,000, or \$36.35 more than his purchase price. This additional premium is really income, for at maturity the purchaser of the bond might deduct \$36.35 from the \$1,000 he receives, spend it if he so desires, and still have his original capital, \$963.65. On the other hand, if he uses only the \$60 received annually and considers the entire \$1,000 when paid at maturity as principal, he has saved the difference between the purchase price and the par value of the bond.

In accordance with the above principle there must be a regular appreciation in the value of the bond each year from the time it is purchased until it matures. This enhancement in value is necessary if the bond is to sell continuously throughout its life at the yield on which it was originally purchased. This point may best be illustrated if we take the extreme case of another 6 per cent bond having but one year to run and selling at the same price as the ten-year bond, that is, \$96.365. Wherein does this situation differ from that just described where the bond had ten years to run? Simply this: in the

⁷ The mathematical return here would be just $6\frac{1}{2}$ per cent.

former case the purchaser had to wait ten years for his \$36.35, whereas in the latter instance a wait of only one year is required. The yield in the latter case would be greatly in excess of that of the former. In fact, a 6 per cent bond having one year to run would have to sell as high as \$99.523 to yield $6\frac{1}{2}$ per cent. In other words, a ten-year, 6 per cent coupon bond, always selling to yield $6\frac{1}{2}$ per cent, will advance year by year until it reaches par at maturity. The market course of such a bond, always yielding 6.5 per cent over a ten-year period, is shown in Fig. 5 following:

Fig. 5.—Prices at which a 6% Bond Having Ten Years to Run Will Sell to Yield $6\frac{1}{2}$ % Each Year.



On the other hand, if the credit position of this bond improves during the period, or if money rates advance, it is conceivable that the market price of the bond may advance at a more rapid rate than that assumed and thus sell on a lower basis, say, to yield 6 per cent. Assume, for instance, that this takes place at the end of the third year as indicated by the line A, A', B, on the chart, at which time the bond still has seven years to run. In this case, the bond would sell at par as contrasted with the former assumed price of \$97.223. By selling at par at this time the purchaser would have made an actual profit of \$27.77 on his bond.⁸

⁸ Where there is a general reduction in interest rates, lowering the yield of all bonds, a profit is created for bondholders as a class. While this is tech-

It appears from the preceding analysis that two kinds of operations are possible in the purchase of bonds. One operation involves the purchase of low coupon bonds selling at a discount and the holding of such bonds until maturity. The other operation is based on the purchase of bonds that are selling below their true values, or bonds of companies whose credit status is likely to improve shortly. When this improvement is recognized by the market, then the bond advances in value at a more rapid rate than that required to maintain a given yield and a profit has been realized. Where the advance in value and the corresponding reduction in yield is a market affair, that is, when the movement in respect to a given bond is at the rate shown by the market as a whole, then the investor is hardly in a position to realize his profit.

Part played by liquid funds.—A still further portion of the business man's funds should be retained in liquid form. This may be accomplished by holding such funds in a savings bank, in short term securities, or in a call account. This policy will not only provide funds for emergencies, but has the further advantage of enabling the owner to make the most of market swings, and so-called extraordinary opportunities. There are always periods when forced selling on the exchanges causes high grade securities, particularly stocks, to sell below their real worth. The man with ready cash at such times can pick up bargains. Likewise, after a long upturn in the market, it is often good policy to convert a portion of one's stock holdings into cash. The percentage of one's total funds to be retained in cash at any time will depend, therefore, on the current financial situation.⁹ During a normal period, that is, where stock

nically true, investors are not in a position to profit thereby. Should they dispose of their holdings they would be confronted with the necessity of reinvesting at a time of generally high bond prices. The bondholder is thus in the same position as the man who bought his home in 1913 at a cost of \$10,000. His property is now worth \$20,000 as a result of general increases in property values. It is true that he was fortunate to have made his purchase in 1913. On the other hand, if he takes his profit by selling he must seek another place in which to live at a time of generally high property values. His profit, therefore, is not a real profit in the sense that, having sold out, he may now buy another piece of property as good as his was in 1913, at the same price as he then paid. During the past four years bondholders as a class have witnessed a substantial appreciation in the value of their holdings. Their profits, however, are less real than they generally suppose, for, having sold a given bond, they are then compelled to reinvest at a time of low interest rates.

⁹ For a more complete discussion of the business cycle and investing see Chapters XXX, XXXI, and XXXII.

prices are well within the extreme high or low points that they attain at the end of a swing, 20 per cent is suggested as a reasonable proportion to be maintained in liquid form. After a long period of declining prices, on the other hand, some of these funds, possibly a substantial portion, should be put in high grade stocks. At the other end of the swing, some stocks will be sold at the then high level of prices and the cash retained for a more favorable buying period.

Profits versus investment risk.—Other questions that must be settled by our hypothetical investor before he can finally determine his program involve consideration of the extent to which he wishes to assume investment risks in order to increase his probable return. Not only is it possible for one to enhance his profit by the purchase of certain types of common stocks, but a higher return may be secured by the purchase of preferred stocks in the place of bonds, or by the purchase of low grade bonds instead of high grade bonds. Let us illustrate this point by two assumptions.

A, following the general plan so far outlined, divides his investments between high grade bonds which sell at low yields, and the highest grade common stocks he can select, such as United States Steel, General Electric, Consolidated Gas of New York, Detroit Edison, and the like. At no time will *A* consider the common stocks of new enterprises, nor those of industries where the business risk is high, as in the case of motor stocks. Similarly *A* never invests in preferred stocks. To this man preferred stocks may offer a somewhat higher return than that promised by high grade bonds, but when he purchases a fixed income bearing security he wants a maximum of safety rather than a somewhat higher yield. He concentrates all his investment risk in his common stock holdings where, as an offset, he has the chance of a large profit if the concerns in which he invests do well.

In contrast with *A*'s plan, *B* is willing to descend from the highest grade investments to so-called "business men's" investments. Many of the bonds he purchases are rated *B*, or at best only *A*. The average return on his bond investments is about 1 per cent higher than that of *A*. And, furthermore, *B* considers preferred stocks in much the same light as bonds. He, therefore, uses a part of his bond funds for the purchase of preferred stocks, thus raising his fixed income still further.

The same general policy is followed in the purchase of common stocks, with the result that *B*'s portfolio contains some of the motor stocks, and the common stocks of certain new enterprises, such as electric refrigeration companies, the radio companies, and some of the smaller oil companies.

Which of these two policies offers the greater opportunities for profit? Which is the better for the average business man? The answer to this question is not easy, for, if *B* keeps in constant touch with market and business conditions, and is sufficiently informed to make the necessary shifts when conditions warrant, he will probably make higher profits over a period of years than will *A*. On the other hand, if he is not constantly alert to changes in tastes, or to shifts in the competitive situation; or if he is not clever in foreseeing the ultimate fate of new enterprises, or in tying up with the best of management in the more speculative fields, he probably will suffer losses over a period of years that will wipe out all his profits. The extent to which a business man can afford to descend from the highest grade to medium grade securities, therefore, will depend in part on the amount of time he can afford to devote to the execution of his investment program and in part on his selective ability. It will also depend on the amount of risk he can afford to take. These are all matters which the individual must decide for himself, and they will vary according to the circumstances of the particular case.

Hedging against changes in price level.—Another matter of general application requires attention at this time. We refer here to the function played by common stocks in an investment program. When we were discussing the allocation of our business man's funds between bonds and preferred stocks the essential reason given for the inclusion of common stocks among his investments was the possibility of a greater profit therefrom. It is true that a greater profit may be derived from investment in common stocks than in bonds, but this is not the only reason for diversification between these two types of securities. Another and more important reason for investing in both stocks and bonds is the desirability of hedging against long time fluctuations in the price level. Economists for many years have recognized the effect of rising and falling prices on various classes of security holders, but not until the past few years has this question been adequately

studied and understood by the lay investor.¹⁰ The rapid advance in prices occurring between 1913 and 1920 inflicted severe losses on the holders of contractual or credit securities, such as bonds, notes, mortgages, and preferred stocks, and created profits for those who invested in so-called ownership securities, such as common stocks, convertible bonds, or participating preferred stocks. To some extent the situation has been reversed since 1920 by the fall in commodity prices and interest rates. These two movements have combined to benefit the holder of so-called contractual securities.

In order better to appreciate the situation just described, we shall consider briefly the effects of rising and falling prices on debtors and creditors. When a bondholder, or a creditor, lends money to a corporation he parts with a given number of immediate dollars in return for the repayment of a like sum at a future time. If prices advance 100 per cent between the time he makes the loan and the time he gets it back, he receives the agreed number of dollars back, it is true, but these dollars are subsequently worth in terms of goods only 50 per cent as much as they were when the loan was made. The bondholder, in terms of goods and services, therefore, receives only one half of what he expected to receive when the loan was made. The stockholder of a corporation, as distinguished from the bondholder, is a partial owner of the business. If prices are rising, the value of his property rises, and, hence, the value of ownership therein. During periods of rising prices profits are also high, business is active, inventories on hand appreciate in value while being manufactured into finished stock, and, generally, wages advance less rapidly than prices. Furthermore, if the corporation has bonds outstanding, it becomes increasingly easy to pay these off during a period of rising prices, for dollars are depreciating in value, and represent a smaller amount of goods and services. During periods of rising prices, therefore, the stockholder gains through an appreciation in the market value of his holdings and through the larger dividends he receives. The situation is reversed, of course, during periods of falling prices. In terms of purchasing power the creditor, or bondholder, gets

¹⁰ One of the most complete of the earlier expositions of this subject is found in "The Rate of Interest," by Irving Fisher, Macmillan Co., New York, 1907.

the agreed amount of dollars, but these represent more goods and more services than he anticipated. The stockholder, as owner and debtor, finds the value of his property decreasing. Profits shrink, business activity falls off, and it becomes increasingly hard to pay off obligations incurred during a period of high prices.

A full recognition of this situation has created a growing interest in common stocks as a type of investment. Ten years ago stocks were regarded as speculative, fraught with risk; something, as a class, to be avoided by the conservative investor. Particularly were stocks considered unsafe and undesirable as trust fund investments. This tradition, however, completely overlooked a very important element of risk. To illustrate concretely, let us assume that a man in 1913 who prided himself on his conservatism invested his entire fund of capital, amounting to \$1,000,000, in high grade, long term bonds, which, then, could not be bought to yield more than 5 per cent. Such an investment would have yielded him an annual income of approximately \$50,000. In 1920 this man, while still receiving \$50,000 annually, would have found retail prices on the average 126 per cent higher than in 1913.¹¹ In other words, his \$50,000 in 1920 would have purchased only as much as about \$22,100 would have purchased in 1913.

Another man, with an equal amount of money, but less conservatively inclined, decided at the same time to invest his funds entirely in common stocks. Being unfamiliar with the technique of selecting securities, he determined to invest approximately \$100,000 in each of the ten most active industrial stocks on the New York Exchange, without any regard to their investment merit. He, therefore, looked up the record of sales the first week of January, 1913, and invested his \$1,000,000 as shown on the following page, taking the first ten listed stocks in the order of total number of shares sold.

If the second man had held these stocks intact during the period from January 1, 1913, to January 1, 1920, he would have realized cash (or scrip) dividends amounting in all to \$843,176, which is equivalent to an annual average return of \$120,454, or about 12 per cent on his original investment.

¹¹ Based on Bureau of Labor Statistics Group Index of prices for 1920. Taken from *Federal Reserve Bulletin*, February, 1923, p. 210.

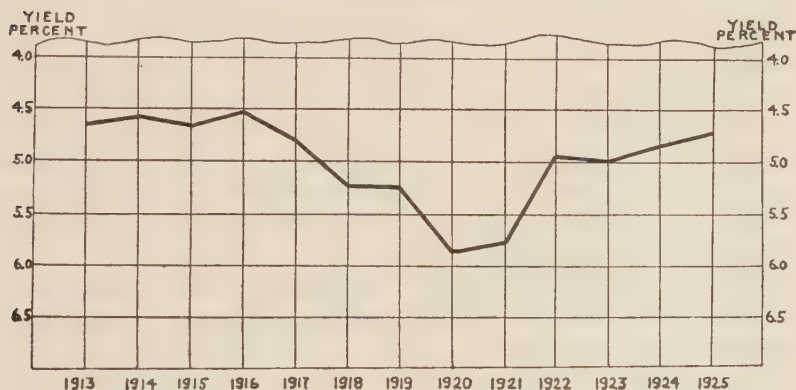
<i>Company</i>	<i>No. Shares Purchased (All Common)</i>	<i>Price per share</i>	<i>Total Cost</i>
American Tobacco	350	\$287.00	\$100,450
Anaconda Copper	2,500	40.00	100,000
Bethlehem Steel	2,500	40.00	100,000
California Petroleum	1,900	52.50	99,750
Chino Copper	2,200	45.00	99,900
Mexican Petroleum	1,380	72.50	100,050
Ray Consolidated	4,760	21.00	99,960
U. S. Rubber.....	1,540	65.00	100,100
U. S. Steel.....	1,480	67.50	99,900
Utah Copper	1,700	59.00	100,300
Total Cost			\$1,000,410

The man who selected common stocks as a medium of investment thus overcame in part the depreciation which took place during this period in the purchasing power of the dollar, because of the larger current income that he received. The story is not complete, however, until we consider the changes that took place in the market values of the two groups of securities during this seven-year period. In 1920, bonds of the same grade as those purchased by the first man in 1913 were selling to yield over 6 per cent. This naturally meant a shrinkage in the market value of his holdings. Some idea of this reduction in principal value, on January 1, 1920, may be approximated by calculating the present value of a permanent annuity of \$50,000 on a 6 per cent basis. Such a computation would give a value of \$833,333, as compared with a 1913 value of \$1,000,000, based on a 5 per cent rate of capitalization. It may be true that the actual market value of the first man's holdings, even though each bond was quoted to yield exactly 6 per cent, would not have been precisely \$833,333, on January 1, 1920. In practice, he would have purchased bonds having definite maturity dates and not permanent annuities. Yet this value would have been approximated had his holdings consisted largely of long term bonds. In any event, we are less interested in the actual difference in market values between the two dates than in the fact that a real and substantial decline in the value of high grade bonds did take place between 1913 and 1920. The following chart will indicate clearly the fact here emphasized. The average yield on sixty high grade bonds in 1914 was 4.58 per cent. The average yield in 1920 was 5.88 per cent. This

increase in yield must have been effected by a corresponding reduction in price. The following chart, showing the course of prices from the period 1913 to 1920, will illustrate this point. This chart was prepared by inverting the yields in order to show the movement in prices.

The holdings of the second individual, however, who bought only common stocks, had a market value of approximately \$2,070,370, on January 1, 1920, or \$1,069,920 more than the original cost in 1913. The higher cash return already noted, together with the enhanced market value of his holdings, would have enabled him in large measure to offset the

Fig. 6.—Course of Bond Prices 1913 to 1925: Inverted Yields of 60 High Grade Bonds.



Standard Statistical Service, Annual Statistical Bulletin, 1926, p. 11.

depreciation in the purchasing power of the dollar which occurred between 1913 and 1920.

This example is presented to show the desirability of insuring against fluctuations in purchasing power by diversifying one's investments between stocks and bonds rather than to bring out any of the features connected with common stock investments. This latter subject will be treated in detail in a later chapter.¹² We are, therefore, not interested especially in the validity of the period covered in the preceding example. It is true that unusual events occurred between 1913 and 1920, which may not soon be repeated. Yet it is the losses from just such unusual situations that may be avoided by including

¹² See Chapter XI.

both bonds and stocks in an investment program, and it is this fact which we now seek to emphasize. An advance in the general price level *per se* affects bondholders adversely, but has a favorable influence on common stocks as a class, since they represent ownership in actual property. Conversely, falling prices react unfavorably on stock values, but enhance the purchasing power derived from bonds.

Diversification between stocks and bonds is especially desirable in those cases where income from the invested fund is to be used in purchasing commodities and services. The funds of educational institutions, libraries, estates, and individuals are invested to yield purchasing power to the beneficiaries, or owners. Quite different, however, is the investment of the reserves of insurance companies and savings bank deposits. In both of these cases nearly all obligations of the investing institution are contractual, that is, are payable in dollars. Because the question of fluctuations in the value of the dollar is largely eliminated, funds of this nature should be invested in the safest dollar obligations available, which yield a satisfactory return. Such obligations are found among bonds, mortgages, and notes of corporations and individuals, where properly secured by assets and earning power.

Some problems in the administration of trust funds.—The policies which govern a man in the investment of his own funds differ from those he would normally follow in managing the investments of others. The man who accepts a fiduciary position is at once charged with certain responsibilities that should find expression in his subsequent acts.

The particular types of investment which the trustee may make depend, in the first instance, on whether the creator of the trust gave any instructions in the document creating the trust as to the manner in which the fund should be invested. Where specific instructions are thus given they govern the trustee, who may do anything in the way of investing for which he has authority in this document. In cases where the creator of the trust gives no directions, then the law of the state in which the decedent was domiciled will govern the trustee in his acts.

States fall in two classes in respect to the control they exercise over the acts of trustees: (1) those which have specific statutes defining so-called legal investments; and (2) those

where the common law governs the specific investments that may be made by trustees. New York may be taken as a good illustration of the first group of states. The statutes of this state definitely limit the investments of trustees (unless specific instructions are given in the instrument creating the trust) to the following: first mortgages on unencumbered real estate to the extent of two thirds of its appraised value; certain first mortgage guaranteed bonds; U. S. government bonds; New York state and municipal bonds; the bonds of nearly all the other states and of most cities of the United States of more than 45,000 population, whose debt is properly limited in respect to population and assessed valuation; and certain railroad bonds.¹³

In Massachusetts, which may be taken as a good illustration of a state which does not limit trustee investments by statutory enactment, the rule is that of good faith and sound discretion; that is, such discretion as a man would use in making a permanent commitment of funds for the sake of income and not for speculation. A general expression of the duties of trustees under the common law of that state is set forth in the following statement:

A trustee, whose duty it is to keep the trust fund safely invested in productive property, ought not to hazard the fund under any temptation to make extraordinary profits. . . . Our cases, however, show that trustees in this Commonwealth are permitted to invest portions of trust funds in dividend paying stocks and interest bearing bonds of private business corporations, when the corporations have acquired by reason of the amount of their property and the prudent management of their affairs such a reputation that cautious and intelligent persons commonly invest their own money in such stocks and bonds as permanent investments.¹⁴

In general, a trustee cannot be held liable for a mere error in judgment in making or failing to make an investment, unless the error is so bad as to show either that he failed to exercise sound discretion, or that he acted in bad faith. Furthermore, the question whether the trustee acted in good faith and exer-

¹³ The student will find a very complete statement of the statutory requirements of various states in respect to legal trustee investment in the state and city supplements of the *Commercial Chronicle*.

¹⁴ Dickenson's Appeal, 152 Mass. 184, 187.

cised sound judgment must be determined by the situation at the time the investment was made, and not in the light of subsequent events.¹⁵

In cases where the trust instrument gives the trustees full power to make investments and to make exchanges in the manner which seems most expedient to them, there is still an obligation on the trustees to use reasonable discretion in making their investments.¹⁶

In states which do not have statutory legislation specifying trust investments, somewhat wider latitude exists in respect to what constitutes satisfactory securities for the trust fund. Thus, in Massachusetts, trustees may invest in the stocks of good business corporations, such as banks, railroads, manufacturing, and insurance companies; in notes of individuals secured by the stock of such companies, and in certificates of deposit of good banks.¹⁷ As a general rule, trustees should not invest in second mortgages; but under some circumstances such investments may be acceptable.¹⁸

Life tenant and remainderman trusts.—The nature of the beneficial interests of the trust will determine to some extent the type of investments to be purchased. For example, a trust may be established, for the purpose of paying an income to a minor during his minority, the trust being brought to an end by turning over the principal sum of the fund to the beneficiary when he becomes of age, or for the purpose of paying the income to a given person during his life and at his death to end the trust by paying over the principal to a person designated. In the latter case, the person entitled to the income is known as a "life tenant," and the person entitled to the principal of the fund at the death of the life tenant is called the remainderman. Where such a situation exists, the trustee is charged with providing a maximum current income for the life tenant, consistent with the safety of the principal. Securities must then be purchased solely for income and not with the idea of effecting *appreciation* in principal. In the case of such trusts, it is especially important to distinguish between

¹⁵ *Pine v. White*, 175 Mass. 585; *Taft v. Smith*, 186 Mass. 31.

¹⁶ *Taft v. Smith*, 186 Mass. 181.

¹⁷ *Harvard College v. Amory*, 26 Mass. 446.

¹⁸ *Taft v. Smith*, 186 Mass. 31.

income and principal when purchasing bonds at a premium or at a discount.¹⁹

The extent to which the trustee may enter the field of second grade securities in an effort to enhance investment income is another question that requires some study of the particular circumstances present. In some cases, there is an urgent need for producing from a given sum more income than can be derived from high grade bond investments. Should the administrator or trustee then purchase less secure bonds and preferred stocks? Within certain limits, yes. But under no circumstances should this policy be carried to the extent of purchasing other than the highest grade preferred stocks, or bonds whose position is lowered by the existence of a situation that is not serious. Among such bonds are those of high grade public utility or railroad companies, which are adequately secured by income, but which are not secured by a direct mortgage on property. The first mortgage bonds of high grade industrial companies also come in this class, the impediment here being the nature of the industry. When following this policy, however, the trustee or administrator may not exceed the legal authority conferred upon him, and, if he is fully restricted by the laws of the state in which the funds are located, his field of choice may be limited.

Where legally permissible, there is the same reason for allocating a portion of the funds of a given trust to common stocks as existed in the case of the individual investor. The beneficiaries of a trust fund are no less affected by fluctuations in the general level of prices than is the individual investor, and may, in fact, be more so. The business man has other sources of income which vary with prices. His salary or his profits increase with rising prices. The beneficiary of a trust fund invested entirely in bonds, on the other hand, may have no means of offsetting the decline in purchasing power which occurs in respect to his or her income at such times. The proportion of the total fund to be allocated to common stocks

¹⁹ In estate accounting the books may be kept on an accrual basis. Where this is done income is adjusted to include the annual appreciation or depreciation on discount or premium bonds resulting from the approach of a maturity date. Income is credited in the case of discount bonds, or charged in the case of premium bonds, with an amount each year sufficient to amortize the entire premium or discount at the maturity of the bond. See Chapter XXVII.

will probably be somewhat smaller in the present case than in the case of the individual, the amount suggested being between 25 and 30 per cent at most. Furthermore, the greatest care should be exercised in the selection of such stocks; commitments should be confined entirely to the leading companies in the most stable fields of industry: public utilities, railroads, or steel and equipment companies. Where immediate income is not of paramount consideration high grade bank and insurance company stocks should make up a substantial portion of such investments. But, where present income is more desirable than future appreciation, stocks should be purchased primarily for their current yield. Earnings should be regarded as a protection to the current dividend rate and not as a factor in building up future values.

Policies governing administration of insurance company investments.—The investment officer of a life insurance company is confronted with somewhat different problems than the private investor. The obligations of insurance companies are always in terms of dollars. Contracts are entered into which call for the future payment of definite sums of money, regardless of fluctuations in the price level. The insurance company, therefore, is not required to protect itself against rising prices by the purchase of stocks, although many insurance companies do purchase a moderate amount of high grade stocks, particularly those of banks and other insurance companies.

On the other hand, the nature of the insurance business gives rise to other interesting investment problems. In this connection let us consider briefly the operations of a life insurance company. Reduced to its simplest terms the essential business of such companies is to enter into contracts with individuals which provide for the payment of a specified sum at death, in return for which the insured pays an annual premium. The determination of the premium in a given case is based on certain actuarial formulas. Without explaining the mathematics involved, the actual premium charged is based on a mortality table which indicates the life expectancy of groups of people of various ages and of either sex, and the assumption that all premiums received will be invested until the death of the insured, at an assumed rate of interest.

If the mortality table accurately measures the life expectancy of a large group of people, and if the officers are

able to invest the reserve funds of the company at the rate assumed by the actuary, then the company's premium income, plus investment income, will equal death claims over a period of years.²⁰ The management of progressive companies, however, are not content with the so-called actuarial rate of interest, which is usually set at $3\frac{1}{2}$ per cent. There is a strong motive for actually investing the company's reserves at a higher rate than this, for in this way larger earnings are available for the stockholders, and dividends may also be paid to the policyholders. The payment of such dividends to policyholders, of course, reduces their insurance cost, so that the companies which pay the largest dividends do the largest business, other things being equal.

The obligations of a life company consist of the contingent liabilities under its policies, as well as the surrender value of the policies in force at any time. In practice, these obligations are measured and carried on the books of the company under the heading "Net Reserves." The actual payments that will have to be made in any one year, however, will be determined largely by the number of policyholders who die. Since the amount of such payments likely to fall in any year can be measured with reasonable accuracy on account of the large number of policyholders, it is not difficult to determine what portion of the company's assets should be in liquid form, and how the maturities of its investments should be arranged.

A study of the classes of investments held by some of the larger companies will show that they fall into four distinct groups: municipal bonds, corporation bonds, stocks, and mortgages. There is a growing tendency for insurance companies to invest in real estate mortgages, due, in part, to the relatively higher yield on such investments, and, in part, to the desirability of distributing funds geographically in a way that will increase the good will of the company.²¹

²⁰ For the sake of simplicity, we have ignored the normal expenses of doing business, which must also be included in the formulas.

²¹ Many states regulate the investments of insurance companies doing business within their borders. The State of New York, for example, requires that the cash capital of domestic insurance corporations, to the extent of the minimum capital required by law, shall be invested and kept invested in government, New York state or municipal bonds, or in bonds and mortgages on improved, unencumbered real property in the state worth 50 per cent more than the amount loaned. The same restrictions apply to foreign companies doing business

Investment policies of fire insurance company.—The fire insurance company operates under somewhat different principles. The losses of such companies are predetermined by experience tables, to be sure; but their contracts expire at a definite period. Fire policies have no cash surrender value, nor are the premiums of such policies computed on the assumption that a fire is bound to occur some day. The net liability of a fire insurance company at any time may be obtained by applying the ratio of expected losses to the face value of insurance in force. In respect to its insurance contracts, therefore, the company should provide for sufficient liquid funds in arranging its investments to meet its current obligations. It is also desirable that a so-called secondary reserve be maintained. That is, the company should at all times be in a position to liquidate a substantial block of its investments in order to meet those emergency losses which have to be paid when a large conflagration or community disaster, such as the San Francisco earthquake, occurs.

Savings bank investments.—Investment problems confronting the savings banks likewise relate to the nature of their business. Their obligations are largely dollar obligations, thus precluding the necessity for purchasing stocks. Their investments are likewise regulated by law, because of the fiduciary relations they enjoy with their depositors. It is necessary for savings banks to maintain a portion of their funds in liquid form in order to meet the demands of depositors for withdrawals, but only a small part of their funds are so required.

within the state to the extent of the minimum capital required of a domestic corporation, except that like securities of the home state of an insurance company organized under the laws of another state of the United States shall be recognized as legal investments for the amount of the minimum capital required.

The residue of the capital and surplus money and funds of every domestic insurance corporation over and above its capital and the deposit required may be invested in or loaned on "the pledge of any of the securities in which deposits are required to be invested or in the public stocks or bonds of any one of the United States, or in bonds and mortgages on improved unencumbered real property in this state worth 50 per centum more than the amount loaned thereon, or except as in this chapter otherwise provided, in the stocks, bonds or other evidence of indebtedness of any solvent institution incorporated under the laws of the United States, or any state thereof, or in such real estate as it is authorized by this chapter to hold" (New York Insurance Law, Sec. 16).

The table and discussion (see p. 34) indicate clearly the recent tendencies in life insurance investing. It has been noted that the movement is distinctly away from stocks and toward real estate mortgages and bonds.

The bulk of their investments are logically found among long term securities, bonds, and mortgages.

Local real estate mortgages are especially satisfactory as a type of investment for savings banks. The lack of marketability characteristic of the real estate mortgage is no drawback to the savings bank, for it is not required to carry its investments in liquid form. The matter of yield far outweighs that of marketability, for the obvious reason that depositors do not make heavy and unexpected withdrawals from savings banks. The nature of a savings deposit precludes such a course, and, also, the law customarily gives the savings bank from 60 to 90 days, if it chooses, to pay the depositor. Its obligations are in no sense demand obligations. Furthermore, lending money on real estate mortgages is a service which the savings bank should logically render to the community, particularly to its own depositors.

The yield on high grade real estate loans, more particularly on home loans, ordinarily exceeds the yield on high grade bonds by about 1 per cent. The difference here is not occasioned by lack of security, but rather by the cost of handling such loans. There is a special technique involved in handling real estate mortgages, which requires careful and frequent appraisals, proper title examinations, a proper follow-up on insurance policies, and a clerical force for handling interest and principal payments. The average overhead cost for management on this type of investment is about one half of 1 per cent, where the amount invested exceeds a million dollars. If this is deducted from the customary rate of 6 per cent, the net return, under present conditions, will be $5\frac{1}{2}$ per cent, as against 4.7 to 5 per cent on other classes of legal investments.²²

Further consideration of matters of general policy: diversification.—The necessity for establishing an investment program as the first step in the investing process is no doubt well established in the reader's mind by this time. The selection of conservative securities is surely one of the important functions to be assumed by the investor, but until a program has been determined which provides for the right types of investments, his task of selection is far more difficult and may lead to unsatisfactory results. Our discussion up to this point has dealt with well defined types of investment funds, or investors,

²² For a more complete discussion of this type of investment see Chapter XXII.

for the purpose of illustrating some of the important questions that arise in respect to the matter of policy determination. There are still other matters, general in their application, yet of sufficient importance to warrant special consideration. The first of these pertains to the matter of diversity. The proper diversification of investments is a first prerequisite, quite regardless of the nature of the funds to be invested. Rules for diversification, therefore, are of general application, and for this reason have been neglected in our discussion of specific types of funds. We speak of rules of diversification and imply thereby the existence of several different kinds of diversification, as contrasted with the simple notion that one has gone far enough if he has included the obligations of several different companies in his portfolio.

The old proverb that cautions one not to put all his eggs in one basket carries a valuable lesson for the investor, despite the contrary opinion held by one of our leading financiers. Andrew Carnegie is reputed to have reversed the famous adage and to have advised a young friend of his "to put all his eggs in one basket, but to watch the basket." No doubt there is an element of truth in what he said, but scientific investing requires the practice of the best ideas in both theories. Diversification should be sought, but not at the expense of watching the basket. Commitments should not be so widely spread that the investor is unable to watch his investments, yet an undue risk is assumed if too large a portion of one's funds is committed to one enterprise.

The simplest type of diversification, as already suggested, requires that one spread his funds over several enterprises. It is not sufficient, however, to diversify among enterprises all in the same field. Fifteen years ago traction securities as a class were in high favor among investors. Fundamental changes have occurred in the industry, however, affecting adversely all traction securities.²³ The investor, therefore, who diversified only among tractions fifteen years ago would have suffered heavily, while another who spread his commitments

²³ The capital losses in this industry from 1915 to 1919 were especially severe. During this period 797 miles of track were sold as junk, while 257 miles had been abandoned. Some of this abandoned mileage has later been reclaimed, but a large part has never been recovered. "Proceedings of the Federal Electric Railways Commission," 1920, pp. 87, 88.

among both electric light and power and traction companies would have protected himself in part against fundamental changes for the worse in either industry. While the securities of the latter companies have declined in value, there has been a marked improvement in the investment status of the former. Consequently, it is a principle of first importance in the investment of funds that diversity should be sought in respect to industries as well as enterprises.

Geographical diversification.—In the case of large funds geographical diversification should also be sought. Insurance companies, in making mortgage loans, assign a certain portion of their funds to each of the various states of the union. Thus do they avoid the danger of substantial losses from local depressions or from shrinkages in values due to fundamental changes in the economic development of a particular territory or region which is tied up with a single industry, or from physical disasters, such as earthquakes or floods. The same policy is adopted by certain large investors who purchase municipal bonds.

In still other cases geographical diversification is carried farther and the securities of foreign countries are included. One of the large investment trusts operating in this country seeks investment in all the principal countries of the world. From studies that this trust has made, it appears that prices of securities are always rising on some of the exchanges of the world, and falling in others. The aim of this trust is to sell in those markets where the averages appear to have reached the top, and to buy in those markets that are recovering from depressions. Geographical diversification is here carried far beyond the limits which the average investor can accomplish.

Diversification as to maturity dates.—Diversification according to maturity date is still another method of insuring against undue losses. As previously noted the prices of high grade bonds vary inversely with interest rates. That is, high interest rates are accompanied by high bond yields, or low bond prices. Conversely, low interest rates are accompanied by low yields and high prices. Let us suppose, now, that a large proportion of the investments of a specific fund mature at a time when interest rates are extremely low. The reinvestment of such funds can be effected only on disadvantageous

terms, because of the general market situation. Contingencies such as this can be guarded against, however, by purchasing bonds with varying maturity dates.

The easiest way in which to effect diversity of this type is to set an arbitrary period within which all maturities shall fall. This period may be twenty years, or longer, if desirable: All new purchases are then confined to bonds maturing within this period, and are so arranged that approximately an equal amount mature each year. In this way the investor is able to command the average interest rate in effect during the period selected. A period of twenty years is suggested, because this is sufficiently long to provide for at least one long swing in the cycle of business conditions. The determination of the period, however, is less important than the exercise of selection in maturity dates.

In some cases, the problem of maturities is governed by other factors. The investment of life insurance represents premiums collected in advance. On account of the actuarial basis on which risks are assumed, the company can predict with some accuracy the amount of the payments it will be required to meet each year, on the basis of policies in force at any given time. The maturity of life insurance investments, therefore, should be so selected as to provide the company with the necessary funds to enable principal payments to be made on its policies. A great majority of the contracts of life insurance companies run for relatively long periods, and for this reason long term bonds are generally purchased by such companies in preference to short term bonds or notes.

In still other situations it may be desirable to have part or all of a fund invested in short term bonds in order to provide liquidity. This applies particularly to the investments of business concerns whose surplus funds are temporarily invested outside of their own businesses. In the case of individuals, likewise, it is desirable to maintain some funds in liquid form in order to meet exigencies as they arise. At death, liquid funds are especially necessary to meet transfer taxes and administration expenses. Other reasons for carrying some short term investments have already been considered.

Tax Exempt versus Taxable Securities.—Whether the purchase of tax exempt securities is desirable, and, if so, the extent to which such securities should be purchased in proportion to

taxable securities, usually is a matter to be settled by reference to the size of the fund to be invested and the total income of the beneficiary.

Many bonds contain a clause whereby the issuing company contracts to pay the normal income tax "not in excess of 2 per cent" on the taxable income received therefrom, and in some cases it agrees to pay as high as 4 per cent. This agreement, however, carries little benefit to the taxpayer whose income is subject to the heavy surtaxes that have been in force since the War.

Certain bonds of the United States, all state bonds, and all municipal bonds and notes are totally exempt from Federal income taxes. This applies also to bonds and notes of the Federal land banks, intermediate credit banks, joint stock land banks, and territories of the United States, all of which are regarded as instrumentalities of the Federal government. In fact, these latter obligations, as well as direct obligations of our Federal government, are further exempt from local taxes, such as the income tax in Massachusetts and New York, the so-called four mill tax in Rhode Island, and like taxes in other states where such taxes on intangibles are in force.

Under the Federal statute, corporations pay an income tax on their earnings at the present rate of $13\frac{1}{2}$ per cent. Were dividends received again taxable as income in the hands of the stockholder obviously there would be double taxation. Furthermore, there would be a disposition in many cases for corporations to withhold earnings rather than pay them out as dividends. As a partial solution of this situation the present law exempts dividends, when received by individuals, from the so-called normal tax; but, nevertheless, such dividends are subject to surtaxes. This applies to dividends received from both common and preferred stocks.

Beyond the limits suggested, however, the income from the bonds and stocks of ordinary corporations is taxable under the Federal income tax law and under state income tax laws where such apply. Furthermore, the rates at which the tax is computed increase as the size of the income increases. It is apparent, therefore, that tax exempt securities are especially attractive to large investors.²⁴

²⁴ See also Chapter XXIX, "Taxation and Investments."

Marketability.—In our analysis of the problems confronting special types of investors the question of marketability, or liquidity, was alluded to. There is a distinction between investment in marketable securities and short term or liquid investments. The latter type of investment implies that the principal sum will be payable within a short period of time. The purchase of marketable securities is made where there is a reasonable chance that it may be necessary to raise cash at some future time, but where there is no definite date at which such cash may be needed. Commercial banks confine their security purchases largely to marketable issues in order to be in a position to raise cash if occasion should arise. The investment of temporary surpluses of business concerns should likewise be confined to marketable issues, or short term issues, if cash is to be needed in the near future. Savings banks confine a large portion of their investments to long term issues and first mortgages on improved real estate which lack marketability, yet they do carry sufficient marketable securities to provide against emergencies. The policy to be adopted in respect to the investment of personal funds or trust estates will depend upon the circumstances of the case. Business men frequently find it desirable to keep part of their funds in marketable securities, if only to have available good collateral against which they may borrow. Banks will loan considerably more on marketable securities than they will on those lacking a ready market.

The marketability of an issue, as a general rule, depends on its size, whether it is listed, and the reputation of the issuing company, although the channels through which it was originally sold must also be considered. A small issue, brought out by a little known banking house and placed among a narrow group of investors, will naturally have a very limited market. A sizable issue, handled by a syndicate of well-known bankers, on the other hand, will be widely traded in even though not listed.²⁵

The term "marketability" is relative in corporate finance.

²⁵ The best source of information relative to the market on unlisted securities is the weekly stock and bond offering service of Standard Statistics Company. These services summarize the bid and asked prices on nearly every security in the United States. Data come out weekly, and are cumulated monthly and annually.

Almost any security can be sold at a price, but when the investor considers marketability he pictures a security which can quickly be disposed of at the prevailing market price. In the case of listed securities which are actively traded in, the spread between the bid and the asked price is usually very small—between $\frac{1}{8}$ and $\frac{1}{4}$ of a point. In the case of liberty bond issues the spread is even less, being $\frac{1}{16}$ or $\frac{1}{32}$ of a point. In the case of inactive securities, in which some over-the-counter trading is done, the spread may be between 1 and 2 points, whereas, in the case of securities which are traded infrequently, the spread may be as great as 10 points. The following quotations will indicate this situation:

QUOTATIONS, ABOUT MAY 1, 1927

<i>Security</i>	<i>Bid</i>	<i>Asked</i>	
U. S. Third Liberty 4 $\frac{1}{4}$'s....	103 28/32	103 30/32	Listed N. Y. Stock Exch.
Atchison, Topeka & St. Fe gen. 4's	93	93 $\frac{1}{4}$	Listed N. Y. Stock Exch.
Boston & Maine (old) 4 $\frac{1}{2}$'s, 1944	89	91	Unlisted
Pittsburg & Birmingham B. K. & A. Tract. 6's 1931...	87	95	Unlisted

Another factor which narrows the margin between the bid and the asked price of bonds is the effect of redemption. Where an issue is being gradually retired through the operation of a sinking fund, the market is usually maintained close to the call or redemption price. There are two reasons for this: (1) The demand created by the sinking funds for bonds is usually sufficient to absorb most of the bonds that come on the market. (2) Bonds which originally went into weak hands, so to speak, are lifted off the market soon after the redemption begins, thus leaving only those bonds that are held by investors who have no strong reasons for selling. Securities whose market is limited invariably sell at a somewhat lower price than equally well secured issues with a ready market, and, hence, enable one to secure a somewhat higher yield, where marketability is not a prerequisite.

Sound investments versus speculative commitments.—As already suggested, the degree of risk that may be tolerated in an investment program will depend largely on the position of the investor. Large investment profits are made, not in high grade bonds, but through the purchase of common stocks,

or preferred stocks and bonds whose present position offers opportunity for substantial improvement. New York, New Haven & Hartford convertible debenture 6's, due in 1948, sold as low as $51\frac{1}{2}$ in 1921. By 1927, however, they had risen to approximately 114. While they still offered at that time an opportunity for further profit through the conversion privilege, the real profit was realized by those who purchased these bonds in 1921 when the road was in poor financial condition, was showing a heavy deficit, and consequently was not considered a good credit risk. Those who purchased in 1921 were for the most part investors in a position to study the situation and to foresee future events. Such individuals, presumably, were in a position to accept a temporary loss or a total loss in case their judgment was wrong. Quite different would have been the position in 1921 of a widow whose sole income came from a \$50,000 fund. The investment of such a fund would require the most carefully selected issues, well secured by income and assets, and not requiring the constant attention necessary to protect investments in less conservative securities.

In other words, investors who are in constant touch with the market, whose judgment enables a selection of securities where risk is overemphasized in current quotations, and who can afford to suffer occasional losses, may well use part of their funds in purchasing new and unsecured issues, common stocks, or the securities of companies in a weak condition, but whose prospects are good. They will be rewarded in so doing in proportion to their skill in analyzing accurately all the factors of the situation, but they will be penalized for their errors in judgment.

Summary.—In the present chapter we have focused attention on some of the more general aspects of the investment problem, which must be considered by the individual investor before he can proceed with the actual selection of securities. What would be a reasonable and proper investment for one person would be highly undesirable for another. Private investors as well as institutions, therefore, should first study the types of securities which best fit their needs and confine their selections to these types.

In determining the question of policies we find that a number of general factors must be weighed. Proper diversity,

in respect to businesses, industries, maturity dates, and types of securities is of prime consideration and must be provided for at all costs. The extent to which present income is desirable as opposed to deferred income is also a matter of policy. Some investors use discount bonds as a means of capital accumulation, whereas others are content to buy either discount or premium bonds. It is also a matter of importance to determine when it becomes profitable to purchase tax exempt bonds. The current rates at which incomes are taxed and the spread between the yield on tax exempt as compared to taxable securities enter into this problem. Another matter to be decided is the extent to which marketability or liquidity is desirable. And, finally, how skilled is the investor in analysis, how far can he rely on his judgment, and to what extent does he feel it proper to purchase securities which are somewhat below the highest grade, seasoned investments in an effort to profit through market appreciation? These are all matters that require attention in the formation of an investment program.

PART II

SECURITIES, CLASSIFICATION,
ANALYSIS OF CONTRACTUAL FEATURES

CHAPTER VI

CLASSIFICATION OF SECURITIES

Lack of standardization in security issues: reasons.—The student who approaches the science of investment for the first time is at once impressed with the apparent lack of standardization in types of securities. Not only is the number of different securities currently traded in very large, but there is a wide variety in the manner in which these securities permit the holders thereof to participate in the income and assets of the borrowing unit, as well as a similar variation in the extent to which control is permitted in the affairs of the corporation. It follows, as a result of this situation, that the risk elements attached to various types of securities differ fundamentally. In view of this confusing situation it is difficult to undertake a detailed analysis of the field without first developing satisfactory methods of classification and considering in a general way nomenclature ordinarily employed when discussing stocks, bonds, and notes. This will be the function of the present chapter.

The first step in this process will be to consider the basic reasons why the market is willing to absorb an increasing variety of securities. The reaction of different investors to the more important characteristics of investments will be analyzed briefly. Consideration will next be given to the principal sources from which investment securities emanate. Subsequently several fundamental bases, according to which the more important kinds of stocks, bonds, and notes may be classified, will be discussed.

Reasons for different kinds of securities.—The reason why there is a lack of standardization in the investment field is twofold. In the first place, the status of corporations and other borrowers of money varies in respect to credit, financial position, character of business, and banking affiliations. Borrowers, who are the issuers of securities, will naturally adopt

those instruments which are best suited to their particular requirements. On the other hand, the needs of investors are not all alike. In analyzing the demand for securities it is convenient to consider some of the qualities of various securities and the reaction of different investors thereto. The primary qualities of a security may conveniently be discussed under the three headings: income, risk, and control.

Subjective characteristics of investments: income and risk.

—One of the first requirements of any investor when making a commitment is income. The amount of income which can be obtained in the investing process, however, depends in part on the amount of risk the investor is willing to take. The person who seeks entirely to eliminate risk, and who is content to receive a return commensurate with the going rate of interest, looks for such investments among high grade, well secured bonds. The return on such securities is fixed, which means that the borrower promises to pay a fixed rate of interest irrespective of business conditions or profits. Principal is also well protected by assets, which may be pledged as security under a mortgage.

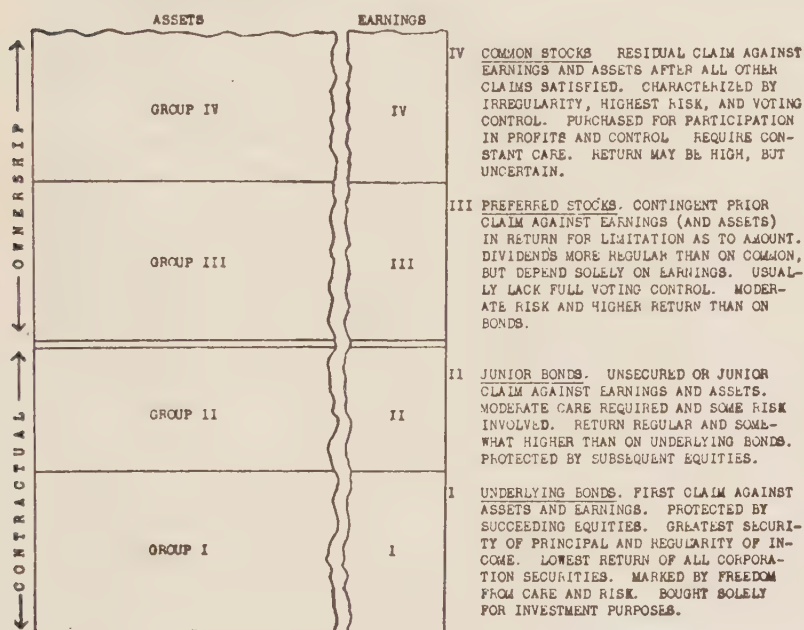
There are other investors willing to assume moderate risks in an effort to raise their return. Nevertheless, they also require in the investment contract the promise of a definite and fixed income and the return of their principal sum at some future date. Such investments are still found in that class of securities known as bonds, although the security offered by the corporation in the form of earnings and assets is somewhat less than in the first case.

Contrasted with investors of the first type are those who are content to assume the maximum risks of the business, but who expect, in return, to receive such profits as may remain after all expenses and charges are met. These are the stockholders or owners of the business. There is no limit to the return which the stockholders may receive on their investment, other than the earning capacity of the business. On the other hand, there is no promise that they will receive any return, nor is there a promise to pay back the principal sum invested at any future time. It is true, however, that, even in the case of stocks, devices are often employed to divide profits in such a way as to assure a steady but constant return to a preferred group, and to allocate the remaining profits to the common

stockholder, whose income is characterized by wide fluctuations when compared with that received by the other interests in the concern.

What has just been said may be pictured graphically somewhat as follows:

Fig. 7.—Chart Showing Priorities of Various Securities of a Corporation in Respect to Claim against Income and Assets and Relative Order of Risks.



The purpose of this diagram is merely to indicate the manner in which a corporation may devise means of financing which appeal to the varied requirements of investors in respect to income and risk. The rate of return promised to investors who insist on the first claim is the lowest, but the best secured. Those who require less security and who are willing to accept a position subordinate to Group I are entitled to a somewhat higher return on their funds. Nevertheless, investors in both of these groups are relieved so far as possible from all uncertainty regarding the amount of income they will receive, in that they have committed their funds to the enterprise only on the basis of a definite contract. In this contract the cor-

poration promises to pay not only a specified annual return but also to pay back the principal sum at a stated time. Above the double line is indicated the claims of the stockholders. The nature of their claims differs fundamentally from that of the bondholders, in that it represents a participation in profits. If profits are large their return is large; if small, their return is small. In fact, the stockholders may not receive any return at all in case earnings do not justify the payment of dividends. Even in the case of stockholders a distinction is often made in the matter of risk and income. In order to meet the requirements of those who prefer to receive a constant income rather than take a chance on receiving large profits during good years and low profits during poor years, a preference may be established among the owners of the corporation. By issuing preferred shares to which a prior claim on *profits* is allocated, there is a reduction in risk. On the other hand, except in certain cases, this is accompanied by a restriction in dividends to a stated amount, as well as a restriction on participation in assets in case of dissolution.

Control.—Closely related to the matter of income and risk is the entire question of control. The extent to which investors in Groups I and II are permitted to share in the management of the corporation is naturally very limited. In fact, bondholders are rarely given any voting control except under special conditions. Not only is this situation logical, in view of the relations between borrower and creditor, but it is desired by a certain group of investors. With control goes all the attendant care and responsibility which many investors seek to avoid. The bondholder is purely a capitalist, in the economic sense, and is in no way an entrepreneur. His essential function consists of committing capital to the management of others, and does not involve the management of capital. As a practical matter the same situation applies, as a rule, to the preferred stockholder, although there are frequent exceptions to this statement. The investor who seeks control ordinarily does so by the purchase of common stock.

Marketability.—The three subjective qualities of investments which we have just discussed under the headings, income, risk, and control, are basic. There remain certain secondary qualities briefly to be discussed. The first of these is marketability. Some investors require a ready market for

their securities. In fact, all investors generally prefer to maintain a part of their holdings in securities that can quickly be disposed of at the prevailing market price. The marketability of a security depends on a number of different factors, such as the size and nature of the issuing company, the method of flotation, and the place and frequency of sale.¹

Freedom from care.—In much the same way that certain investors seek to avoid the responsibility of management, so do they seek to avoid the care and watching necessary to safeguard a fund invested in speculative issues. By referring to our diagram on page 117 it will be seen that the position of investors in Group I is protected by the succeeding equities of Groups II, III, and IV. Moderate fluctuations in business conditions and earnings are of little concern to the first mortgage bondholder. On the other hand, as we pass from Group I down to Group IV, we not only find that greater care is required in making original selections but that the investor, once having made his commitment, must safeguard it by more carefully watching the operations of the issuing corporations. There is certainly a much greater need for careful supervision of a fund invested in common stocks than in well secured bonds. And it is the extent to which a given investor is qualified or has the inclination to devote to supervision that will induce him to purchase the securities with high risks and opportunities for large income in contrast to low risk and low income investments.

Taxability.—The question of taxability is a matter of concern to certain investors, particularly individuals with large incomes. The bonds of states and municipalities are totally exempt from the Federal income tax. Certain other bonds are also wholly or partially exempt from Federal or state income taxes. Individuals with incomes of sufficient size to be subject to the higher surtaxes may often find it profitable to buy tax exempt securities, although their market yield is lower.²

Maturity.—The maturity of an issue is also a factor that is often considered by the investor. Some investors prefer very short maturities, in order to maintain their funds in a

¹ For a more complete discussion of marketability see p. 108.

² For a more complete discussion of tax exempt securities see Chapter XXIX.

liquid condition. Other investors require a diversification among the maturity dates of their investments, in order to make sure of an approximately equal amount of maturities each year. While still other investors prefer long maturities, in order to avoid the necessity of frequent reinvestment. These varied requirements make it possible to market issues with a wide variety of maturity dates.³

Sources of investment securities: corporate financing.—The principal investment securities in this country are the stocks and bonds of corporations. In fact, except for government issues, shortly to be discussed, the corporation is practically the sole primary issuer of securities in the accepted sense of the word. An exception to this statement is found in the case of "Business or Express Trusts," which are organizations not unlike the corporation in many respects and which actually issue certificates of indebtedness and ownership in much the same way as corporations.⁴ The joint stock form of organization might conceivably be used in the place of the corporation to carry on business enterprises and to issue transferable shares of stock. As a practical matter, however, it is rarely used in this country, on account of the unlimited liability attaching to the transferable shares.

The outstanding characteristic of securities issued by corporations and express trusts is the fact that their return is normally dependent on the *productivity* of the enterprise. The value of the assets of a typical business enterprise is closely associated with actual or potential earning power; and both interest on bonds and dividends on stock depend on past or present earnings. The relatively few exceptions to this statement are found in bonds issued by incorporated charitable and religious organizations.

Governments as borrowers.—The securities of governments—federal, state, and municipal—while important, to be sure, do not occupy quite the same position as corporate issues. The total amount of government issues in the United

³ The diversification of maturity dates is discussed on p. 105.

⁴ Among the more important companies to be organized in this fashion are the Amoskeag Manufacturing Co. of Manchester, N. H., The Adams Express Company, and the Massachusetts Lighting Companies. For a complete discussion of this type of organization see Gerstenberg, C. W., "Principles of Business Organization," pp. 56-71, 1925, Prentice-Hall, Inc., 70 Fifth Ave., New York.

States has recently been estimated at about \$30,000,000,000 as compared with about \$90,000,000,000 of corporate securities outstanding, while foreign government bonds are estimated at between \$2,000,000,000 and \$4,000,000,000.

In contrast to corporate securities, whose ultimate value depends on earnings, the income and ultimate return of principal in the case of government securities depends on taxing power and credit. The corollary to this situation is that funds secured by corporations are supposedly employed for productive purposes, while funds borrowed by governments may or may not be used productively. However, it very frequently happens that governments use borrowed funds productively in the sense that private corporations use them.

Securities of financial institutions: holding companies.—

Financial institutions may be defined as companies whose main business consists of investing funds. Where the financial institution issues its own securities against its purchases of the securities of other corporations, the resulting supply may be considered secondary in nature. Thus, if a corporation is formed to purchase the stocks of corporations A and B, and issues its own stock to effect this purchase, there is no net change in the total supply of securities in the hands of the public. There is merely a substitution of one security for another. On the other hand, where the holding company carries on some business independent of merely holding the securities of other companies, or where there is a stepping up of capitalization, then there will be a net increase in the supply of securities.

One of the most common types of financial institutions is the outright holding company. Such a corporation is formed solely to acquire and to control the stocks and bonds of other corporations. The holding company issues its own securities against assets, which consist mainly of the stocks and bonds of the underlying companies. The true type of holding company does not engage in operations on its own account, but purchases the securities of other corporations with the idea of getting an investment return, and also for the purpose of controlling the management of its subsidiaries.⁵ In this latter

⁵ A more complete analysis of the holding company as it operates in the public utility field is given in Chapter XVI.

respect, it differs fundamentally from the investment company, which purchases solely for the purpose of investment, and is not interested in control.

Investment trusts.—Another type of financial institution is the Investment Trust, or Investment Company. Such a corporation or trust is formed purely for investment purposes and its essential function consists of the purchase and sale of stocks and bonds, and, in some cases, property. The company derives its income almost entirely from interest and dividends on the securities it holds; from syndicate profits, where it participates in syndicate underwriting; and from profits on the purchase and sale of securities. It does not attempt to manage the companies whose securities it owns.⁶

Other types: banks and insurance companies.—Commercial banks and insurance companies must also be classed as financial institutions. Where such enterprises are conducted under the corporate form of organization, they acquire their capital in much the same way as ordinary business corporations, except that, generally speaking, they are financed by the issue of only one type of security—common stock. While an essential part of the business of these institutions is that of investing, they perform collateral services as well. Furthermore, the nature of their business is such that they must be considered as primary creators of securities, in so far as their own stocks are concerned.

Classification of investment securities: common stocks.—We are now prepared to take up several different methods by which investment securities may be classified. In this connection we will not give detailed consideration to different types of securities, but merely a survey of the entire field. The balance of this chapter will be devoted to clarification rather than to explanation, and only such definitions will be given as are necessary. Subsequently, all the more important types of securities will be considered in detail and their characteristics more thoroughly discussed.

The first major division of securities is between those which represent ownership and those which are contractual. This distinction was clearly emphasized when we considered some of the subjective characteristics of securities in an earlier part

⁶ For a more complete discussion of this type of institution see Chapter XXI.

of this chapter. Common stock represents control "par excellence," in that it generally has sole voting powers, except under certain conditions later to be discussed. Furthermore, it is subject to the highest investment risks of all the various securities of the corporation. On the other hand, common stock is entitled to all earnings and assets of the business after prior claims are satisfied.

Common stocks may be issued with a stated par value or with no par value. This distinction, however, is mechanical rather than fundamental, and does not affect, *per se*, the investment status of the issue. Of greater importance is the division of common stocks into nonvoting and voting (frequently designated as "Class A" and "Class B," respectively). Here, again, we get back to the question of control. Theoretically, all the common stockholders of a large corporation are entitled to vote at stockholders' meetings. As a practical matter many small holders never exercise this control. The recent movement on the part of investment bankers to concentrate the voting control into a small number of shares designated as voting shares is not entirely illogical, although it has its disadvantages as will later be shown.⁷

Preferred stocks.—A certain class of investors are content to allow their participation in profits to be limited, in return for a prior claim thereto. Such investors, however, require a somewhat higher return than the bonds of a corporation afford and are willing to forego the security attached to a contractual instrument. To meet such requirements the corporation may split its stock up into preferred and common.

As the name of the title suggests, preferred stocks enjoy certain priorities over other classes of stock. If no special reference is made to the specific nature of these priorities, the legal assumption is that the preference feature applies only to dividends. More commonly, however, there is a definite statement in the preferred stock contract, which gives this class of stock priority in respect to both assets and earnings. Except in the case of participating preferred stock, which will be defined shortly, the preferred stockholder is restricted in the amount of dividends he may receive as well as in the amount of assets to which he is entitled in cases of dissolution.

⁷ See p. 239.

Preferred stocks: cumulative and noncumulative.—A further classification of preferred stock is possible according to whether the dividends thereon are cumulative. Where cumulative, there is an agreement that the preferred stock shall receive the full amount of dividends for all years, both current and past, before any dividends can be paid on the common. If, for any reason, the corporation is required to omit dividends in any year, or is able to pay only a portion of the full dividend on the preferred stock, the amount so deferred accumulates and must be paid before any dividends may be paid on the common. Where the stock is noncumulative, the assumption is simply that the full preferred dividend must be paid in *any year* before any common dividends are allowable; but if only a part of the preferred dividend is paid, or if no dividends at all are paid during the year, there is no accumulation, and the preferred holder has suffered an irreparable loss.

While it is true that the corporation does not contract to pay back the principal sum indicated on the preferred stock certificate, nor does it promise or contract to pay a specified amount of interest annually, there may be a variety of agreements between the corporation and the preferred stockholder regarding the setting up of sinking funds for redemption, the maintenance of a proper liquid position, the issue of prior obligations, and so on.⁸

First and second preferred stocks.—Preferred stocks may also be classified in order of their priorities. In the case of certain large companies we may have several different kinds of preferred stocks, such as first preferred, second preferred, and preferred. The distinction here is analogous in some respects to that found to exist between first and second mortgage bonds. The first preferred stock has a claim on current earnings and on assets in case of dissolution, preceding all other stocks. The second preferred comes next, and so on. Or, looked at in another way, junior preferred stock issues are subordinate to the first preferred in respect to dividends and assets.

Callable versus Noncallable.—Preferred stock may be callable or noncallable. The distinction here is much the same as in the case of bonds. Where a stock is callable the cor-

⁸ For a full discussion of these subjects, see Chapter X.

poration is given the privilege of retiring all or part of the issue at a specified price, usually in excess of par. Accumulated dividends, if any, must also be paid at this time. From the corporation's standpoint the callable feature is advantageous, in that it provides a way for the common stockholder to eliminate all preferred stock, and thus to improve the capital structure of the corporation. From the stockholder's point of view the callable feature may or may not be desirable.

Participating preferred stocks.—Participating preferred stock is distinguished from nonparticipating, in that the former enjoys the right to participate in the earnings of a corporation over and above the specified dividend rate. This right, of course, is valuable from the stockholder's standpoint, but not always profitable from the corporation's standpoint. For this reason, we do not find corporations issuing such stock, unless their credit position is so weak as to require the presence of attractive features. The participating feature may also be given through the right to convert preferred into common stock. A more complete analysis of these provisions will also be given in later chapters.

Control: voting and nonvoting preferred stock.—Customarily, voting control is denied the preferred stockholder, but not necessarily so. Thus, preferred stock may be voting or nonvoting. In some cases, limited voting rights are given to the preferred stockholders. From the investor's standpoint it is logical that voting control should be concentrated in the hands of the common stockholder, for the preferred holder is accorded a relatively certain income in place of a fluctuating income, by virtue of his preferred position in respect to earnings. The same motives which lead him to choose this position will naturally lessen his desire to participate in the management of the enterprise. We may now summarize our classification of stocks somewhat as follows:

Common stocks classified according to par value:

With par value.

No par value.

Common stocks classified according to control:

Class A nonvoting.

Class B voting.

Preferred stocks:

- Preferred as to dividends.
- Preferred as to dividends and assets.
- Cumulative.
- Noncumulative.
- First preferred.
- Second preferred.
- Callable and noncallable.
- Participating or convertible.
- Voting and nonvoting.

Contractual obligations: classification more complex.—

The task of classifying the contractual obligations of corporations is much more complex than that of classifying ownership securities. A partial reason for this situation undoubtedly lies in the fact that an almost infinite variety of investment contracts is possible. In the case of ownership securities, it is possible, of course, to vary such matters as control, priorities in respect to dividends and assets, or the mechanical form which a particular issue will take. On the other hand, many of the features of credit or contractual obligations are lacking. Generally, the problem of creating a mortgage on certain assets, the assets that can be pledged, the maturity of the bond issue, methods of paying off the bonds, the specific purposes for which the money is to be used, and so on are not involved in issuing stock, but are matters that require consideration in the case of bond issues. The more factors that enter into the problem the greater the opportunity for variation in the form in which the contract finally emerges.

Classification of bonds according to legal nature of securities.—The first basis for classifying bonds, and certainly one of the most important, is the legal nature of the claim which they have against assets and earnings of the borrowing unit. Here the major division is between unsecured and secured issues. An unsecured bond is simply the promise of the borrower to pay to a registered holder or to bearer a principal sum at a stated time and place, and also to pay a stated rate of interest on the principal until maturity. A secured bond, on the other hand, is a promise of the borrower to pay, as in the previous case, accompanied by a pledge of certain assets under some form of a mortgage. In case the borrower fails

to live up to his agreement, complete title to these assets may be acquired by the bondholders through foreclosure proceedings.

Unsecured bonds.—Attention will first be directed to some of the more important types of unsecured bonds. Federal or government bonds are generally unsecured, but not always so. In the case of smaller countries, whose credit is not of the highest, revenues from import and export taxes and other imposts are often pledged as security for their debts.⁹ State bonds in this country are almost invariably unsecured. The same may be said of the debts of minor subdivisions, such as counties, special taxing districts, and cities and towns. Exceptions to this statement are found where municipalities operate public utilities, such as water works, electric lighting plants, electric railways, or the like, and issue bonds, not in the nature of general obligations, but secured by a lien on the revenues of the utility.¹⁰

Corporate issues.—The bonds issued by business corporations and investment companies may be secured or unsecured, depending on the combination of factors present in a given case. Unsecured bonds of corporations are frequently spoken of as "debentures," although there are other types of unsecured issues. The term "note" is used to designate evidence of short term borrowing. Notes are generally, although not necessarily, unsecured.¹¹ Income bonds, the interest on which is payable only when earned, are sometimes classed as unsecured obligations, although here again such issues may be secured. Receiver's certificates, while they frequently rate ahead of all the bonds of a corporation, are rarely secured by a pledge of specific assets.

Secured bonds.—The straight first mortgage bond, as the name suggests, represents the clearest cut example of a secured bond. Here we have a bond based on a definite contract with the corporation, but which is also secured by a first mortgage on specific tangible assets, such as the plant and

⁹ See Chapter XXVI, following, for a more complete study of loans so secured.

¹⁰ See Chapter XXV, following, for a more complete analysis of municipal issues.

¹¹ The distinction between notes and bonds is largely a matter of the time for which the issue is put out. Where the security has an original life of less than 5 years the term "note" is generally used. Longer term issues are called bonds. This distinction is only a matter of custom, however.

equipment of the company, which is given to secure the performance of the contract. In the event of default, under the terms of the mortgage, title to the property may be acquired by the bondholders through foreclosure proceedings. Where the mortgage given as security is a second, or a third, instead of a first, mortgage, on the company's property, then the bonds are known as second or third mortgage bonds.

Quite naturally, investors are less satisfied with the security of a second or a third, than with that of a first, mortgage. It is, therefore, to the advantage of the corporation or investment banker responsible for selling the securities, to avoid the use of the term "second mortgage" if possible. This can often be done by giving some other title to the bonds. The term "first and general mortgage bonds" may often be used without actually violating the laws of veracity, yet such a term may really mean that the issue is a first mortgage on a very small part of the corporation's property, and a general mortgage on the balance, subject to prior mortgages.

The term "first and refunding mortgage bonds" implies that the bonds are secured by a first mortgage on some of the company's properties only. The essential purpose for which such bonds are issued, as the second part of the title implies, is to refund other issues of the corporation's bonds as they come due. The extent to which they become first mortgage bonds as a result of this financing will depend partly on the rights and security accorded the maturing or refunding bonds, and partly on the contract provisions of the refunding issue itself. There are other titles which are frequently applied to bonds, such as "prior lien," "refunding," or "blanket mortgage." The use of such terms often leaves the investor uninformed as to the real nature of the liens against the corporate property. The obvious conclusion to be drawn from our discussion up to this point is that the bond title is misleading and fails to convey a real picture of the actual security going with a particular issue of bonds. Essential facts of this nature are contained in the bond indenture and not in the bond title. The student should clearly appreciate this fact early in his career, otherwise serious mistakes are likely to be made.

"Divisional bonds" is the term often used when referring to bonds secured by a mortgage on a particular division of a railroad. The term "sectional bonds" is used to convey a

somewhat similar meaning. Here the bond is secured by a section of the road.

Collateral trust bonds.—Collateral trust bonds are secured by the pledge of other securities, either stocks or bonds, and customarily are issued by companies found in the so-called "investment group." Such bonds are secured by a mortgage, but the property pledged differs from that found in the case of mortgage bonds. In the latter case, the property is physical, in the former, it is intangible.¹² Further classification may be used here to designate the nature of the collateral pledged. Where the underlying securities are all first mortgage bonds, the collateral issue may be known as a first mortgage collateral trust bond. Certificates of beneficial interest are issued against the deposit of certain stocks in a voting trust. In this way the holders of the certificates are given an interest in the earnings and in the equitable assets if the company liquidates. Bankers shares are somewhat similar and represent a fractional participation in deposited collateral, usually stock. In the latter case, the purpose is often to reduce the unit value of high priced shares of stock. For instance, stock selling at \$500 a share may be deposited and 10 "bankers shares" issued against each original share. On account of the lower unit value the "bankers shares" often sell at an aggregate price in excess of the market value of the underlying collateral.

Equipment securities.—Securities that are secured by a pledge of railroad equipment, either under a mortgage, or by means of a conditional bill of sale, are known as equipment securities.¹³ Where the conveyance of the pledged property is in the form of a mortgage, then the obligations are commonly referred to as *equipment bonds*. In other cases, title to the equipment remains in the hands of a trustee and the equipment is leased to the railroad under a combined lease and conditional bill of sale. Where this is done, equipment trust *certificates* are then issued to give participation in the lease and conditional bill of sale. The equipment bond contains nothing in the way of legal protection that is not contained in a straight mortgage bond. The trust certificate, however, differs in its legal aspects from a mortgage bond, in

¹² See further discussion of collateral trust bonds, p. 170.

¹³ See further discussion of equipment securities, p. 166.

that title to the property does not pass to the borrowing corporation until all the terms of the contract have been lived up to.

Real estate securities.—In general the term "real estate securities" is applied to bonds and stocks issued for the purpose of financing real estate transactions. Mortgage bonds secured by a specific mortgage on a definite parcel of real estate are known as "real estate mortgage bonds." A further distinction is possible, however, if one wishes to classify the issue according to the type of property mortgaged. Where bonds are issued against a mortgage on an office building the bond may be called an "office building bond." Similarly, an issue may be secured by a mortgage on an apartment house and referred to as an "apartment house bond," and so on.

Bonds that are issued against a single large mortgage differ somewhat from those that are issued against the pledge of a number of different mortgages. In the latter case, a number of mortgages are assigned to a trustee and bonds are issued against such collateral. The security here consists of a group of small mortgages in contrast to a fractional participation in one large mortgage.¹⁴ Bonds in the latter category are sometimes referred to as "collateral real estate mortgage bonds." In cases where the underlying mortgages are on farm properties the bonds may be referred to as "farm mortgage bonds."¹⁵

A still further method of financing real estate projects is by means of the fee ownership certificate. Let us assume, in order to get a picture of the steps leading up to the issuance of such securities, that a group of men wish to erect an office building on a given site. The first step involves the purchase of the land, which may be done by an individual or a corporation. Thereupon, a long term lease is drawn up with the individual or the corporation that is to erect the building, providing for the erection of the building on the land, as well as

¹⁴ For a complete discussion of real estate bonds see Chapter XXII.

¹⁵ Under the Federal Farm Loan System in this country Federal land banks and joint stock banks are permitted to issue debenture bonds. The principal assets of these banks are farm mortgages. Such bonds are sometimes referred to as farm mortgage bonds. A complete discussion of the operations of these banks will be found in Chapter XXIII.

the payment of an annual rental. The ownership of the land is then divided into a number of fractional parts by the issuance of fee ownership certificates. The purchase of a certificate gives the holder the right to a fractional participation in the lease. The owner of the building is usually given the option at some time during the life of the lease to purchase the land, at a price that will enable all the fee ownership certificates to be called. The lease also provides for the payment of an annual rental sufficient to pay all interest requirements on the certificates. On the other hand, if the lessor is unable to meet his rental charges, the lease is broken and title to both land and building reverts to the certificate holders.

Miscellaneous.—It would be possible to extend our list of bonds classified according to the nature of the security almost indefinitely. Thus, "timber bonds" is a term used to designate issues secured by timber lands; "terminal bonds," issues secured by terminal property; "wharf bonds," issues secured by wharves; "steamship bonds," issues secured by steamship companies; and so on. It is scarcely necessary to offer any elaborate definitions in cases where the title indicates rather clearly what the bond stands for.

Bonds with general security.—In still other cases the security behind the bond is partly physical and partly general. Where two or more corporations are merged, the absorbing company may assume the bonds of the acquired company. If the old physical assets still serve as security for the bond, the bond itself has a twofold security, in that it also becomes a general obligation of the new company. Where consolidation is effected by means of a lease of the property of a subsidiary company, the lessee corporation may guarantee the bonds of the lessor company. The bond is then known as a "guaranteed bond." It is also possible, where one corporation leases another, for the lessee company to guarantee the payment of dividends on the stock of the lessor company. This is customarily provided for by arranging a sufficient rental under the terms of the lease to provide for expenses of the lessor company and a stated dividend on its stock. In such cases, the stock, to all intents and purposes, acquires the investment characteristics of a bond. Other forms of guaranteed bonds are "indorsed bonds" or "stamped bonds." Where several corporations engage in an enterprise

coöperatively, they may borrow jointly, or else guarantee jointly the payment of the bonds of a subsidiary company formed for the purpose of holding the assets to be used in common. In such instances the resulting issue is known as a "joint bond."

The following chart summarizes the different kinds of bonds already considered, with special reference to the character of the lien and the nature of the underlying assets:

Classification of Bonds According to Legal Nature of Security

Unsecured Bonds

- Federal or Government Bonds
- State Bonds
- Bonds of Minor Subdivisions
 - County
 - District
 - City and Town
- Corporate Issues
 - Debentures
 - Notes
 - Income Bonds
 - Receivers' Certificates

Secured Bonds

- Mortgage Bonds
 - First, Second, Third, etc., Mortgage Bonds
 - General Mortgage Bonds
 - First and General Mortgage
 - First and Refunding
 - Prior Lien Bonds
 - Refunding Bonds
 - Blanket Mortgage Bonds
 - Divisional Bonds
 - Sectional Bonds

Collateral Trust Bonds

- Mortgage Collateral Trust Bonds
- Certificates of Beneficial Interest
- Bankers Shares
- Equipment Securities
 - Equipment Bonds
 - Trust Certificates

- Real Estate Securities
 - Real Estate Mortgage Bonds
 - Office Building Bonds
 - Apartment House Bonds
 - Collateral Real Estate Mortgage Bonds
 - Farm Mortgage Bonds
 - Leasehold Bonds
 - Fee Ownership Certificates
- Miscellaneous
 - Timber Bonds
 - Terminal Bonds
 - Wharf Bonds
 - Steamship Bonds, etc.
- Bonds with General Security
 - Assumed Bonds
 - Guaranteed Bonds and Stock
 - Indorsed Bonds
 - Stamped Bonds
 - Joint Bonds

Classification of bonds according to purpose of issue.—

Another basis for the classification of bonds is according to the purpose for which the bond is issued. "Funding" or "re-funding" bonds are issued to provide the necessary funds for the payment of bonds about to become due, or for the purpose of calling bonds prior to their maturity date, where such a policy is desirable. Such bonds are sometimes called "redeemable bonds." The term "consolidated bond" may apply to an issue which is put out for the purpose of retiring and consolidating all the various bonds of a corporation into one issue. In this way the corporation is able to simplify its financial structure: or the term may be used to designate an issue secured by a mortgage on property of different corporations which have been consolidated. Such bonds may constitute a first mortgage on the various properties, or they may be subject to existing liens.

The term "purchase money bond" refers to an obligation issued in full or in part payment for property, or for a company about to be absorbed. When such a bond is issued for property, it is probable that it will be a lien on that property; when, for a company, it is probable that the stock of the company will be pledged as security for the bonds; and, in case the

interest is not properly paid, then the stock of the company reverts to the bondholders.

"Construction bonds" are issued to secure money for the construction of new buildings or property. The authorized issue is sufficient to provide the necessary funds to complete the project, but funds are generally advanced to the corporation only as the progress of the construction warrants. In case the entire issue is sold in advance, the trustee is authorized to make advances at various stages of the construction. In other cases, bonds are sold only as construction progresses.

"Temporary bonds" are sometimes issued to tide the corporation over a short period of time pending the execution of permanent financial arrangements. "Interim bonds," or receipts, on the other hand, are used to give evidence of the advance of money by the investor before an issue of securities, which has been sold, can be delivered. The company, in the interim bond or receipt, promises to deliver the actual or permanent bond to the holder of the temporary or interim receipt on surrender thereof when the bonds are ready for delivery.

It is also possible to reclassify some of the various types of bonds already considered under our present heading. Thus, while a terminal bond is so-called because it is secured by terminal property, it may, nevertheless, be included in our present group, if it was issued *for the purpose* of securing terminal property. The same may be said of equipment bonds, wharf bonds, timber bonds, bridge bonds, and so on. It is impossible entirely to avoid duplication in a discussion of this nature.

"Extended bonds" are created when, for some special reason, the payment of the principal of a bond has been extended beyond the stated maturity date by the mutual consent of the corporation and the owner of the bond. The security is then known as an "extended," a "continued," or a "renewed" bond. In such cases, the extension privilege is stamped on the old certificate and all other features of the contract remain the same. This procedure is sometimes used in order to avoid the flotation of a new loan or refunding operations when market conditions are unfavorable. Receivers' certificates are likewise issued for the purpose of providing funds for operations during receivership.

Bonds, government.—Our discussion up to this point has dealt primarily with corporate bonds. We may similarly classify government, state, and municipal issues according to the purpose for which they are issued. "Special assessment" bonds are floated to enable the city to make local improvements; and, as their name implies, interest and principal on these bonds is provided for by special assessments against the property which is benefited by such expenditures. "Tax anticipation warrants" are issued to secure funds in anticipation of taxes and are paid off as soon as taxes are collected. "Water bonds" are sold to provide the funds necessary for the construction of municipal water works. "Paving bonds" may be issued for the purpose of paying for street paving, "sewer bonds" for the construction of sewers, and so on. It is hardly necessary to give an exhaustive definition of all the various titles under which municipal bonds exist, for their very names convey sufficient information to indicate the purposes for which they are issued.¹⁶

Summary.—The following table summarizes the various bonds that have been discussed under the classification "according to purpose of issue," and suggests others not specifically mentioned. This method or basis for classification has some value to the investor, in that it centers attention on the purposes for which his funds are to be used. On the other hand, the purpose for which an issue is floated does not reflect in any direct way the contract provisions which add to, or subtract from, its investment merit, nor does the question of purpose indicate the financial standing of the issuing corporation.

Classification of Bonds According to Purpose of Issue

Corporate Bonds
Funding or Refunding Bonds
Consolidated Bonds
Redeemable Bonds
Purchase-money Bonds
Construction Bonds
Temporary or Interim Bonds or Receipts

¹⁶ Federal, state, and municipal bonds are treated more fully in Chapters XXIII, XXIV, and XXV.

- Terminal Bonds
- Equipment Bonds
- Wharf and Dock Bonds
- Timber Bonds
- Bridge Bonds
- Redemption Bonds
- Extended, Continued, or Renewed Bonds
- Receivers' Certificates

- Government, State, and Municipal Bonds
 - Special Assessment Bonds
 - Tax Anticipation Warrants
 - Water Bonds
 - Paving Bonds (Also Street and Road)
 - Sewer Bonds
 - Bonus Bonds
 - Drainage Bonds
 - Irrigation Bonds
 - Levee Bonds
 - Reclamation Bonds
 - Electric Light and Railway Bonds
 - Sanitary District Bonds
 - Incinerator Bonds

Classification of bonds according to type of issuing debtor.—Another possible method of classifying bonds is according to type of issuing unit. When discussing government bonds one may refer to obligations of our federal government, to state bonds, to territorial possessions, to municipalities, or to bonds of foreign countries. Similarly, corporate bonds may be referred to as railroad bonds, public utility bonds, industrial bonds, real estate bonds, or foreign corporate bonds. Such a classification likewise has some value to the investor, in that it enables him to study the business risks inherent in different lines of undertaking. By so doing, he may conclude, for instance, that, as a class, bonds of our federal, state, and municipal governments, have the highest investment rating of all securities. Railroad securities, as a group, are generally accorded second rank, largely because the railroads of the country furnish an indispensable service which must be had at almost any cost and because they operate under public franchise. Even though they are regulated in respect to rates it is reasonable to suppose that a fair return on the capital

investment in such an industry will be permitted. For a somewhat similar reason public utility securities rank close to railroads, although certain types of public utilities, such as traction companies, have recently been in poor repute. Industrial securities, as a class, are usually accorded a considerably lower rating than either rails or utilities, on account of competition and other factors which inject elements of risk in their operations. The term "foreign bonds" is applied to the issues of foreign governments, although there is a tendency, in practice, to use the term indiscriminately, whether discussing obligations of foreign governments or of private enterprises located in foreign countries.

Summary.—A detailed classification of bonds according to the nature of the issuing corporation follows. There has been no attempt here to supply further definition than that appearing in the descriptive title.

Classification of Bonds According to Type of Issuing Debtor

- Government Bonds

 - Federal Government Bonds

- State Bonds

- Territorial Bonds

- Municipal Bonds

 - County Bonds

 - Town Bonds

 - City or Municipal Bonds

 - School District Bonds

 - Special District Bonds

 - (For other types see page 136)

- Foreign Government Bonds

- Corporate Bonds

- Railroad Bonds

- Public Utility Bonds

 - Electric Light and Power Bonds

 - Electric Railway Bonds

 - Express Company Bonds

 - Gas Company Bonds

 - Telephone and Telegraph Bonds

 - Water Company Bonds

 - Steamship Bonds

 - Terminal Company Bonds

- Industrial Bonds
 - Steel Bonds
 - Textile Company Bonds
 - Automobile Company Bonds
 - Copper Company Bonds
 - Oil Bonds
 - Equipment Company Bonds
 - Timber Bonds
- Real Estate Bonds
- (See subdivisions on page 133)
- Foreign Bonds of Private Corporations

Classification of bonds according to methods of payment.

—Those features of the bond contract which pertain to the methods of paying the principal, and also the interest thereon, may merely cover matters of detail, or they may involve questions of vital importance to the investor. Whether the bonds are coupon bonds or registered bonds is purely a matter of detail and involves no question of merit. In the case of coupon bonds, both the principal of the bond and the current interest are payable to bearer. That is, the person having physical possession of the bond has merely to clip the coupons as they become due and present them to the nearest bank for collection. Likewise, when the bond comes due, the principal sum may be collected by presenting the bond itself. In the case of registered bonds, on the other hand, a register is maintained in the transfer office of the company. The name of each bondholder is contained therein and interest is mailed when due to the registered holders of such bonds in the form of a check. At maturity the principal is so paid. In case a registered bond is sold it must be indorsed by the seller and sent to the transfer agent of the company in order that it may be registered in the name of the new holder. Bonds may be registered as to both principal and interest, or as to principal only.

Of more fundamental importance, on the other hand, are the provisions made in the bond for payment of the principal at maturity. For instance, the bond contract sometimes provides that the issuing corporation shall lay aside from earnings each year a definite sum, in order that the principal of the bond may be met at maturity. Where this is done, the fund

into which such sums are paid is called a sinking fund and the bond is called a "sinking fund bond."

The same result may be accomplished by dividing the entire issue of bonds into series with varying maturity dates. Under this plan a certain portion of the bonds come due and are paid each year. At maturity, the last issue only remains to be paid. Where this method is used the bonds may be designated as "serial bonds." Generally speaking, serial bonds are somewhat more desirable than sinking fund bonds. In the former case, a certain percentage of the entire issue becomes due each year and must be paid off. In this way, there is no uncertainty as to the maturity of the bonds, and, furthermore, there is no doubt that the bonds will be paid as they fall due, provided, of course, the financial condition of the corporation so warrants. From the bondholders' standpoint the retirement, annually, of a certain amount of the issue increases the equity behind the remaining bonds. In the case of sinking fund bonds, however, there is often a question as to whether the fund, supposedly built up by charges against income, will really be available at the maturity of the issue.

Corporations frequently reserve the right to call in and pay off all or part of an issue before maturity at some designated price. A provision of this nature may enable the corporation to reduce its fixed charges when interest rates are low and is desirable from the borrower's point of view for this reason. The bondholder, on the other hand, may find it difficult after his bond has been called to reinvest the funds he receives at the same rate of interest that he formerly received.¹⁷

Quite the reverse of the callable feature is the participation feature given either by means of a conversion privilege or by the right to participate in earnings. Convertible bonds, as the name implies, may be converted at a specified price into the stock of the corporation, either preferred or common. Of course, the purpose in extending such a privilege to the bondholder is to enable him, at some future time, to enjoy a more complete participation in the prosperity of the company. Where the bond is convertible into preferred stock the participation is restricted, but where conversion may be made into

¹⁷ The present chapter is one of definition and classification only. For this reason we shall postpone detailed consideration of the effect of the call feature on the investor until a later chapter. See p. 188.

common stock the bondholder is in a dual position. He has a contractual investment during the less certain years of the corporation's growth and may, at his own option, become an owner with unrestricted participation if the company becomes successful.

The same idea may be worked out in the so-called participating bond. Here the bondholder is promised a definite rate of interest during the life of his bond; but, if the earnings of the corporation grow and dividends on the stock increase, the bondholder is promised a participation therein. In the case of participating bonds, after all charges have been met, and after a certain rate of dividend has been paid on the outstanding stock of the company, no further dividends may be declared without increasing the interest paid to the bondholder.

A new type of bond, recently developed, involves the payment of both principal and interest in terms of purchasing power, rather than in terms of a specific number of dollars. The amount so paid is computed on the basis of a selected index number. Such a bond might be designated a stabilized bond, in that the return, in terms of effective purchasing power, is stabilized.¹⁸

In this country nearly all bonds are payable in gold coin of the present weight and fineness. For this reason a bond may be designated a "gold bond." Such a title, however, means little by itself, for it conveys no idea as to the security behind the bond or other important features of the contract. Where bonds are payable in English pounds they are known as sterling bonds.¹⁹ In similar fashion French bonds may be payable in francs, German bonds in marks, and so on. When bonds are payable in a foreign currency, an additional element of risk is created, for it is necessary that the investor convert the funds he receives as interest or principal into the currency of this country at the prevailing rate of exchange. So long as the current exchange quotations do not diverge substantially from par there is no large loss or gain. But when fluctuations are wide, as was the case during and after the War, a seri-

¹⁸ For an example of this type of bond see p. 202.

¹⁹ Alabama and Great Southern 5's, 1927, are payable in pounds. New York, New Haven and Hartford 15 year European loan gold 4's (now 7's) were originally issued in francs.

ous situation is created. The holders of German and French bonds, payable in foreign currencies, have recently suffered severe losses. In fact even the holders of sterling bonds were seriously affected when sterling exchange was at a substantial discount after the War.

Bonds payable in silver are known as silver bonds. In case the bond has no maturity date, but runs perpetually, it is known as a perpetual bond. In England such bonds are called consols, in France, rentes. The following table summarizes the more important types of bonds, classified according to methods of payment:

**Classification of Bonds According to Methods of Paying
Principal and Interest**

Payment of

Principal

- Coupon Bonds
- Registered Bonds
- Sinking Fund Bonds
- Serial Bonds
- Callable Bonds
- Convertible Bonds
- Participating Bonds
- Stabilized Bonds
- Gold Bonds
- Bonds Payable in Foreign Currency
 - Sterling Bonds
 - Franc Bonds
 - Mark Bonds
 - Silver Bonds
- Perpetual Bonds, Consols, Rentes

Interest

- Coupon Bonds
- Registered Bonds
- Participating Bonds
- Stabilized Bonds

The preceding classification is presented, not with the idea of covering in an exhaustive fashion all the various bonds that might be included, but rather with the idea of familiarizing the student with the short descriptive terms customarily applied to bonds when emphasis is sought in respect to methods of payment and redemption.

Short descriptive titles misleading.—A further word of caution is in place at this time. The only real purpose, in dealing with short descriptive titles in the fashion that we have just employed, and the only advantage of the definitions so far inserted, is to familiarize the student with some of the terms commonly used in investment circles and to give him a bird's-eye view of the entire field. Short titles, however, are surprisingly misleading, so far as the real security behind a bond is concerned. In fact, before the investor can consider himself in a position accurately to judge the merits of a given investment, he must first undertake an exhaustive study of the terms and conditions under which it was issued and the contract which the corporation has made with the investor. In the case of a bond, this requires a careful analysis of the corporate indenture; in the case of stock, the by-laws of the corporation must be referred to.

A first and refunding bond may be identified as a first mortgage bond, whereas it is a first mortgage on only a relatively insignificant part of the property. A sinking fund bond may, upon examination, prove to have provisions in respect to sinking fund payments so weak as to be of little value. A collateral trust bond may be secured by a deposit of common stock only. In brief, the mere descriptive title of a bond, which is used in classifying bonds roughly, is of value only in so far as the contract features found in the instrument under which the bond is issued support the general impression which the title conveys. The real character of the bond, therefore, is not to be found in a brief descriptive title, but in an exhaustive study of the contract features found in what is known as the corporate indenture, deed of trust, or corporate mortgage, that is, the legal instrument in which the bond contract is set forth. This type of information in the case of stock issues is found in the by-laws of the corporation. We shall take up, in following chapters, a detailed consideration of the more important legal characteristics of investments, and at that time the error of placing too great a reliance on the descriptive title of a security will be more apparent.

CHAPTER VII

SECURED BONDS

Secured loans are always accompanied by the pledge of specific assets, generally by means of a mortgage. A mortgage may be defined as a deed absolute in form, but subject to defeasance, given to secure the performance of some act on the part of the mortgagor, usually his repayment of a loan made by the mortgagee at the time of the execution and delivery of the mortgage. In the customary transaction, the mortgagor borrows money from the mortgagee and gives as security a deed of the property, which deed provides that it shall be null and void if at the time appointed the mortgagor repays the loan.

When the term "mortgage" is used the average person thinks of an ordinary real estate mortgage. Business corporations, however, often mortgage their properties in order to secure loans. These mortgages may cover specific property, such as land and buildings, but usually are of the general variety and cover everything, present and future, that the company owns or may own. A third form of security that has become popular is the so-called equipment mortgage, in which the relations of all parties involved are somewhat complex, and a description of which, therefore, will not be attempted here.¹ A fourth kind of mortgage used in corporate financing is the so-called collateral trust mortgage, in which the security consists wholly of negotiable securities, usually the stocks and bonds of subsidiaries owned by the parent company.²

Illustration of typical mortgage.—In order to emphasize more clearly the real nature of the mortgage, we shall examine one in detail. The following is a reproduction of a simple real estate mortgage executed by an individual. In theory it

¹ For a more complete account of equipment securities see p. 166.

² See p. 170.

does not differ from the complex mortgage given to secure corporate bonds.

Reproduction of Mortgage Instrument *

Comments

Parties. Notice that Brooks is stated to be unmarried, since if he were married his wife's name would have to appear as co-maker in order to make the mortgage precede her dower right.

Preamble or recitals.

Granting Clause, including consideration. Notice the true consideration is contained in the recitals. The consideration here mentioned amounts to legal "camouflage."

Description of the property mortgaged.

Mortgage

THIS INDENTURE, made this 10th day of May, 1923, between Abner Brooks (unmarried), party of the first part, and hereafter designated the mortgagor, and Charles Dawson, party of the second part, hereinafter designated the mortgagee.

WHEREAS, the said mortgagor is, by virtue of a bond bearing even date herewith, justly indebted to the said mortgagee in the sum of \$25,000 lawful money of the United States, secured to be paid on the 10th day of May, 1925, together with the interest thereon, to be computed from the 10th day of May, 1923, at the rate of 6 per cent per annum, and to be paid on the 10th day of November next ensuing the date hereof and semi-annually thereafter.

NOW THIS INDENTURE WITNESSETH, that the mortgagor, for the better securing the payment of the said sum of money mentioned in the said bond or obligation, with interest thereon, and also for and in consideration of the sum of ONE DOLLAR, to the mortgagor in hand paid by the mortgagee, the receipt whereof is hereby acknowledged, does hereby grant and release unto the mortgagee, and to his heirs and assigns forever, ALL that certain lot, piece, or parcel of land, with all the buildings and improvements thereon made or erected, situate, lying and being in the Borough of Manhattan, City, County and State of New York, bounded and described as follows, to wit:

BEGINNING at a certain point on the north side of Joffre Avenue distance one hundred feet east of that point known as the northeast corner formed by the intersection of Foch Street and Joffre Avenue, running thence (1) fifty feet due east on a line with the said Joffre Avenue; thence (2) one hundred feet due north on a line parallel with said Foch Street; thence (3) fifty feet due west on a line parallel with said Joffre Avenue; thence (4) one hundred feet due south on a line parallel with said Foch Street to the place beginning.

* Gerstenberg, C. W., "Financial Organization and Management," pp. 174-179, 1925, Prentice-Hall, Inc., 70 Fifth Ave., New York.

TOGETHER with all fixtures and articles attached to or used in connection with said premises, all of which are declared to be covered by this mortgage; together with the appurtenances, and all the estate and rights of the party of the first part in and to said premises.

Habendum clause states the quantity of the estate conveyed. Notice that if the instrument closed here, the mortgagee would get the fee, that is the absolute title.

Defeasance clause states conditions under which conveyance granted in former paragraphs will be defeated.

Covenants. The following covenants are not necessary to a complete mortgage. Some are almost always included, others usually are included. They are agreements by the mortgagor, who retains actual possession of the property, better to protect the mortgagee.

Covenant conferring right to sell. This covenant is, under the laws of most States, unnecessary.

Covenant to insure and repair.

TO HAVE AND TO HOLD the above-granted premises unto the said mortgagee, his heirs and assigns forever.

PROVIDED ALWAYS that if the said mortgagor, or the heirs, executives, administrators, or the personal representatives, successors or assigns of the said mortgagor, pay the said sum of money mentioned in the said bond or obligation, and the interest thereon, at the time and in the manner mentioned in the said bond or obligation, then these presents and the estate hereby granted, shall cease, determine and be void.

AND the said mortgagor covenants with the mortgagee as follows:

FIRST—That the mortgagor will pay the indebtedness as hereinbefore provided, and, if default be made in the payment of any part thereof, the mortgagee shall have power to sell the premises herein described according to law. Said premises may be sold in one parcel, any provision of the law to the contrary notwithstanding.

SECOND—That the mortgagor will keep the buildings on the said premises insured against loss by fire for the benefit of the mortgagee. And should the mortgagee, by reason of any such insurance against loss by fire, as aforesaid, receive any sum or sums of money for any damage by fire to the said building or buildings, such amount may be retained and applied by said mortgagee toward payment of the amount hereby secured, or the same may be paid over either wholly or in part to the said mortgagor, or the heirs, successors or assigns of the mort-

Interest and tax clause. This covenant serves to "accelerate the maturity" if taxes or interest are not paid.

Covenants of "general warranty" and "further assurance."

Right of entry.

Receiver.

The right conferred by this covenant is termed "the right of subrogation."

gagor, to enable said mortgagor to repair said buildings or to erect new buildings in their place, or for any other purpose or object satisfactory to the said mortgagee, without affecting the lien of this mortgage for the full amount secured hereby before such damage by fire, or such payment ever took place.

THIRD—And it is hereby expressly agreed that the whole of said principal sum, or so much thereof as may remain unpaid, shall become due at the option of the mortgagee after default in the payment of any tax, assessment or water rate for sixty days after notice and demand, or in case of the actual or threatened demolition or removal of any building erected upon the said premises, anything herein contained to the contrary notwithstanding.

FOURTH—That the mortgagor will execute any further necessary assurance of the title to said premises and will forever warrant said title.

FIFTH—That if default shall be made in the payment of the principal sum mentioned in the said bond, or of any installment thereof, or of the interest which shall accrue thereon, or of any part of either, at the respective times therein specified for the payment thereof, the mortgagee shall have the right forthwith, after any such default, to enter upon and take possession of the said mortgaged premises, and to let the said premises, and receive the rents, issues, and profits thereof, and to apply the same after payment of all necessary charges and expenses, on account of the amount hereby secured, and said rents and profits are in the event of any such default hereby assigned to the mortgagee.

SIXTH—And the mortgagee shall also be at liberty immediately after any such default, upon proceedings being commenced for the foreclosure of this mortgage, to apply for the appointment of a receiver of the rents and profits of the said premises without notice, and the mortgagee shall be entitled to the appointment of such a receiver as a matter of right, without consideration of the value of the mortgaged premises as security for the amount due the mortgagee, or the solvency of any person or persons liable for the payment of such amounts.

SEVENTH—And the mortgagor does further covenant and agree that, in default of the payment of any taxes, charges, and assessments

which may be imposed by law upon the said mortgaged premises, or any part thereof, it shall and may be lawful for the said mortgagee, without notice to or demand from the mortgagor, to pay the amount of any such tax, charge, or assessment, and any amount so paid the mortgagor covenants and agrees to repay to the mortgagee, with interest thereon, without notice or demand, and the same shall be a lien on the said premises, and be secured by the said bond and by these presents and the whole amount thereby secured, if not then due, shall thereupon, if the mortgagee so elect, become due and payable forthwith, anything herein to the contrary notwithstanding.

So-called Brundage clause. Inserted in mortgage principally to permit mortgagee to raise the rate of interest equal in amount to any taxes that State may impose on the mortgagee in respect to the mortgage.

EIGHTH—It is hereby further agreed by the parties hereto that, if at any time before said bond is paid, any law be enacted changing the law in relation to taxation so as to affect this mortgage or the debt thereby secured, or the owner or holder thereof, in respect thereto, then said bond and this mortgage shall become due and payable at the expiration of thirty days after written notice requiring the payment of the mortgage debt shall have been given to the owner of the mortgaged premises, anything herein contained to the contrary notwithstanding.

Covenant to give estoppel certificate, which, if the mortgagee wishes to sell the mortgage, will be demanded by the purchaser of the mortgage.

NINTH—The mortgagor, or any subsequent owner of the premises described herein, shall, upon request, made either personally or by registered mail, certify, in writing, to the mortgagee or any proposed assignee of this mortgage, the amount of principal and interest that may be due on this mortgage, and whether or not there are any offsets or defenses to the same, and upon the failure to furnish such certificate after the expiration of six days in case the request is made personally, or after the expiration of thirty days after the mailing of such request in case the request is made by mail, this mortgage shall become due at the option of the holder thereof, anything herein contained to the contrary notwithstanding.

Acceleration of maturity on account of violation of municipal ordinances.

TENTH—It is expressly understood and agreed that the whole of said principal sum and the interest shall become due at the option of the mortgagee, upon failure of any owner of the above described premises to comply with any requirement of any department of the City of New York, within six months after notice in writing of such requirements shall have been

given to the then owner of said premises by the mortgagee, anything herein contained to the contrary notwithstanding.

Covenant as to communications.

ELEVENTH—Every provision for notice and demand or request contained herein shall be deemed fulfilled by written notice and demand or request personally served on one or more of the persons who shall at the time hold the record title to the premises, or on their heirs or successors, or by registered mail directed to such person or persons or their heirs or successors, at his, their or its address to the mortgagee last known.

IN WITNESS WHEREOF, the said mortgagor hath signed and sealed this instrument the day and year first above written.

ABNER BROOKS (Seal)

Signed, sealed and delivered
in the presence of
Edward Frothingham
George Hamilton

State of New York }
County of New York } ss:

On this 10th day of May, 1923, before me personally came Abner Brooks, to me known and known to me to be the person described in and who executed the foregoing instrument, and he duly acknowledged to me that he executed the said instrument for the purposes therein contained.

ISAAC JOHNSON,
Notary Public No. 1001,
County of New York,
State of New York.

(Notarial Seal)

Operation and purpose of mortgage.—Under the common law the real estate mortgage printed above operated just as it read, as a transfer of the legal title of the property. The mortgagee then had the legal title which the mortgagor could get back upon the payment of the loan. This right to get back the legal title is called the equity of redemption.

If the day comes around for the repayment of the loan, and the money is not forthcoming, the mortgagee may begin foreclosure proceedings. The common law proceedings are now sometimes called "strict foreclosure" to indicate that their purpose is to foreclose to prevent the mortgagor in the future from claiming the right to redeem. These foreclosure proceedings in effect vest the equitable as well as the legal title in the mortgagee. Under modern statutes foreclosure proceedings usually take the form of what is known as "fore-

closure and sale." An action is brought, the purpose of which is to get a decree from an equity court directing the sale of the property for the benefit of the mortgagee. If a first mortgage is being thus foreclosed, the property sold is really the interest of the mortgagor, as well as the interest of the second mortgagee, if there be one, and of all persons getting interests in the property subsequent to the recording of the first mortgage. Thus, if a second mortgage is being foreclosed, the owner, the third, and subsequent mortgagees are made parties to the action, since it is their interests which are being sold. The purchaser at the foreclosure sale would take the property subject to the first mortgage and subject to taxes, but clear of the other liens.

Under very modern statutes, as, for example, in New York, mortgages are worded, not as a conveyance, but as a lien, and the only kind of action to be brought is a foreclosure of the lien. The general effect is the same as foreclosure and sale.

Illustration of principles.—The principles contained in the foregoing paragraphs are so important that it seems advisable to clarify them with an illustration. Thus, we may assume that *A*, the owner of property reasonably worth \$100,000, mortgages it to *B* for \$60,000, and then to *C* for \$20,000, and then to *D* for \$15,000. *B* will be said to have a first mortgage, *C* a second mortgage, and *D* a third mortgage. What really happened is this: *A* has turned over his legal title to *B*, and has retained an equitable right, called the equity of redemption, that is, the right to get back what he has transferred upon giving back to *B* the amount *B* has loaned. When *A* gives the second mortgage to *C* he really turns over to him the equity behind *B*'s mortgage and takes another equity of redemption. This second equity of redemption is the right to redeem the first equity of redemption. And the same process takes place with the third mortgage.³

We can now bring out the relationship in still more detail by assuming that a mortgage is foreclosed. If the interest on the third mortgage is not paid, it will be foreclosed, and the

³ The word "equity" is often used in two senses: first, as an abbreviation of "equity of redemption," in which case it may be defined as a legal right; and, second, as the value of that right. In the above example *A* had an equity of \$40,000 after giving the first mortgage, an equity of \$20,000 after giving the second mortgage, and an equity of \$5,000 only after giving the third mortgage.

purchaser at the foreclosure sale will buy the equity which the owner had, plus the third mortgagee's interest in the property (subject to the first and second mortgages). Nominally, this was worth \$20,000. Let us suppose the sale brought \$12,000 and was made to *X*. What would *X* get? He would get the property encumbered with the mortgages to *B* and *C*. Since *D*'s mortgage was for \$15,000, *D* would not be paid in full out of the sale and would look to *A* personally for the deficiency. If *A* had sold the property to *W* before the foreclosure, and *W* had assumed all the mortgages, *D* would collect the deficiency judgment from *W*.⁴

Now, let us suppose the facts as they were originally, but that the interest on *B*'s mortgage is not paid. Let us suppose that *B* forecloses. He would bring his action against *A*, the owner, and against *C* and *D*, the subsequent mortgagees. The property now would be sold to a purchaser who would get it free from all encumbrances. If *X* bought it and paid only \$50,000 for it, *B* would get the entire \$50,000. (We omit for the sake of simplicity the cost of the foreclosure proceedings, though, in fact, they are first to be paid from the proceeds of the sale.) *B* would also have a deficiency judgment against *A* for \$10,000, since *A*'s personal debt on his bond is in fact \$60,000, of which only \$50,000 was paid by the foreclosure sale. *C* and *D* as well could hold *A* personally for the amounts of the mortgages they hold, if accompanied by a properly executed bond or note.⁵

If *X*, instead of paying \$50,000, had paid \$70,000, this latter sum would go, \$60,000 to *B* and \$10,000 to *C*. If *X* had paid \$85,000, this sum would go, \$60,000 to *B*, \$20,000 to *C*, and \$5,000 to *D*. If, by any chance, the property sold for \$97,000, the sums paid would be \$60,000 to *B*, \$20,000 to *C*, \$15,000 to *D*, and \$2,000 to *A*.

Corporate mortgages.—In the case of real estate mortgages the mortgagor gives the mortgagee two instruments: the mortgage as described, and a bond or a note. The latter instrument evidences the personal obligation of the debtor to repay the loan, whereas the mortgage gives evidence that the

⁴ *W* would not be personally liable for deficiency judgments if he took the property "subject to" the mortgages and not "assuming" them.

⁵ See Lilly, William, "Individual and Corporation Mortgages," p. 70, 1918, Doubleday, Page & Co., Garden City, Long Island.

obligation rests on the property.⁶ Thus, in the preceding section, where we assumed that the interests of *C* and *D* were wiped out by foreclosure, *A* would still be liable to *C* and *D* on the personal obligation expressed in the notes or bonds that accompanied the mortgages.

The essential difference between an individual mortgage and a corporate mortgage is in the matter of detail. Whereas the former instrument is usually only four or five pages long, corporate mortgages, covering as they do complex assets and an intricate organization of earning power, are generally very long. As an example, the mortgage securing a \$50,000,000 issue of Great Northern Railway bonds contains 50,000 words and has the appearance of a formidable book.⁷ It would seem for these reasons alone that the corporation would not care to issue mortgages to each of its bondholders, numbering, perhaps, in the tens of thousands. But there is really a more vital reason why the mortgagor company does not issue a mortgage direct to each of its mortgagees, that is, to each of its bondholders: while it makes many agreements in the mortgage to protect these bondholders, it prefers not to deal with each one separately, for each, separately, might place a different interpretation on the agreements, and chaos would be the result of negotiations in respect thereto. For these several reasons, then, the general corporate mortgage is made out to a trustee or trustees, who represent all the bondholders, however that body may be constituted at any time. These instruments thus made in favor of trustees are sometimes called corporate deeds of trust. It should be noticed, however, that, while every cor-

⁶ If the mortgagor sells the property *subject* to the mortgage, the mortgagor will still remain primarily liable, but of course the purchaser, that is, the new owner, would get the benefit of the payment of the mortgage and ordinarily would pay the mortgage on the due date. If he did not pay it and the mortgage were foreclosed, the original mortgagor would be liable for any deficiency in case the proceeds of the foreclosure sale were insufficient to pay the foreclosure costs plus the amount of the mortgage with unpaid interest. Where the purchaser of the property takes it *assuming* the mortgage, not only his property, but he, himself, becomes liable for the debt.

⁷ It would, of course, be impractical to reproduce such an instrument here. The student is referred to "Materials of Corporation Finance" (2d ed.), pp. 183-254, by Gerstenberg, C. W. (Prentice-Hall, Inc., 70 Fifth Ave., New York), for a complete reproduction of the mortgage securing Jones & McLaughlin 5 per cent bonds.

porate mortgage is a deed of trust, not every deed of trust is a mortgage. When a corporation issues unsecured bonds, or debentures,⁸ as they are called, it usually makes various promises in respect to the way its business shall be conducted, and these agreements are contained in an indenture to one or more trustees for the benefit of all the bondholders.⁹

Trustee.—Under the early corporate mortgages it was quite customary to appoint one or two individuals as trustees; later it became customary to appoint a trust company, in order to avoid difficulties arising from the limited life of a natural person. But, since large corporations are likely to have property in various states, and since a trust company—a corporation—may have difficulty in protecting property in jurisdictions outside the state of its organization, it is customary to appoint two trustees, one a trust company and the other an American citizen.¹⁰ Frequently the mortgage provides for limitations on the powers of the individual, such as that the custody of pledged securities shall rest in the trust company solely.

Position of trustee.—The trustee is supposed to protect the bondholders, and, therefore, desires to get ample power in the corporate mortgage to carry out this protection without assuming too much responsibility. The fee of the trustee, "for services prior to defaults, is merely a reasonable sum to cover the value of supervision and clerical work in connection with the issue of bonds."¹¹ The duties and responsibilities of the trustees are carefully prescribed in the mortgage and a long line of decisions is kept in mind when the legal drafters of the mortgage phrase the clauses pertaining to the trustees.

Functions of trustee.—The trustee, among other duties, is responsible for authentication of bonds issued. This consists

⁸ In America, debentures are a species of bond, namely, an unsecured bond, or one that is not protected by the lien of a mortgage on property. In England the term "debenture" is used to refer to the whole class of bonds; in other words, Englishmen speak of debentures where Americans speak of bonds.

⁹ See Gerstenberg, C. W., "Materials of Corporation Finance" (2d ed.), pp. 291-298, Prentice-Hall, Inc., 70 Fifth Ave., New York.

¹⁰ If the position of the individual trustee becomes vacant, the corporate trustee is usually given power to appoint his successor. Indeed, the individual trustee is usually an officer of the company of the corporate trustee.

¹¹ Stetson, Francis Lynde, et al., "Some Legal Phases of Corporate Financing," p. 52, 1917, Macmillan Co., New York.

simply in signing a certificate, usually found on the outside panel of the bond and reading as follows:

This bond is one of the bonds described in the within mentioned mortgage and deed of trust.

BLANK TRUST COMPANY,

By

TRUST OFFICER.

By requiring the proper authentication of all bonds in this way, overissue is guarded against as well as wrongful issue by officers of the corporation.

In the case of large blanket mortgages, where stocks and bonds of subsidiaries are pledged as collateral, actual transfer of such securities is made to the trustee. Not only is possession transferred, but title as well. The trustee, therefore, becomes the legal owner of the securities on the company's books. Customarily income and voting control is reserved by the parent company so long as dividends are not in default. In carefully drawn mortgages the trustee is given the power to provide against any impairment of the value of pledged securities.

The corporation, in the corporate mortgage, not only promises to pay interest and principal when due, but agrees also to do many other things. It agrees to keep the pledged property in a proper state of repair, to pay all taxes when due, and to keep the property insured. There may also be a variety of other provisions, as we shall see, pertaining to sinking fund provisions, the issue of further bonds, the maintenance of a proper cash position, and so on. In respect to all obligations in the mortgage, the duty of the company is to be responsible, as it were, primarily, to the trustee. This arrangement makes the company responsible to but one person, and mortgages usually provide that all steps taken for the enforcement of any of the terms of the mortgage must first be taken by the trustee. In order to safeguard the bondholders where the trustee may be negligent or derelict, a clause is usually inserted to the effect that a certain percentage of those interested, say, 10 per cent, may demand in writing that the trustee take legal steps actively to protect the bondholders' interests in respect to some alleged default. If this

demand is accompanied by a proper tender of fees to cover the costs that the legal action may entail, and if the trustee refuses to act, the bondholders then may proceed in their own names. Ordinarily, of course, the tangle would be straightened out immediately in an equity court by the appointment of a receiver.

Rights of trustee to protect mortgaged property.—The trustee is generally given power to protect the mortgaged property, that is, to see that the company pays its taxes, pays the interest on underlying bonds, and keeps its property insured. If any one of these obligations is neglected the trustee may perform it and will have a lien on the property for any moneys disbursed. The trustee is also given the right to release certain property from the lien of the mortgage; suitable provision, however, being made that adequate value is placed under the lien of the mortgage to take the place of the released property. The company also covenants in the mortgage to maintain the value of the mortgaged estate. For a breach of this, or any other covenant, the trustee may declare the principal due, and, if not paid, may begin suit for foreclosure of the mortgage.

Covenants of the mortgagor company.—We have noted some of the covenants which a corporation undertakes in a general corporate mortgage. Other usual covenants may now briefly engage our attention.

First, there is the usual covenant to pay the principal and the interest without deduction for taxes. When a mortgage contains this covenant, the bonds issued under it are said to be "tax free" or "tax exempt," though this latter term should be reserved for such bonds as those issued by public corporations, which are exempt from taxation under the law. Ordinarily, the wording of the covenant, together with the wording of the law and the regulations of the government, do not make these bonds wholly free from taxation, but free up to a certain percentage of the interest only, which percentage the company agrees to pay to the government for the bondholders. The bondholder, of course, pays the rest of the tax himself.

The company agrees that it will not consent to an extension for the payment of any interest, since such an arrangement would increase the amount of the mortgage debt by an amount equivalent to the deferred interest.

The company usually agrees to comply with the rules necessary to make the bonds listable on the stock exchange.

The company usually agrees to record the mortgage wherever it is necessary to record it, in order to bring the company's property under the lien of the mortgage.

Frequently the company will covenant not to pay dividends unless its assets are so abundant, both fixed and liquid, that there is little danger of the company's subsequent failure. In the Jones & Laughlin Steel Co. mortgage, for example, will be found the following provisions:

The company covenants and agrees that the surplus of quick assets over the liabilities of the Company other than the outstanding bonds issued under this indenture shall always equal at least \$8,000,000 so long as the said outstanding bonds shall equal or exceed \$8,000,000, and covenants and agrees that said surplus of quick assets over liabilities shall always equal the amount of bonds outstanding so long as the face amount of the bonds outstanding shall be less than \$8,000,000. By the phrase "quick assets" is meant cash in banks, on hand and in transit, good accounts and short-time bills and notes or similar securities received on the sale of products; raw material, material in process of being manufactured, manufactured products and supplies (it being understood that all material, manufactures and supplies shall be figured at the market value thereof at the time of the valuation thereof hereunder). It is expressly understood and agreed that in the term "raw material" no ore, coal or limestone shall be included except such as has actually been mined or quarried and is then on the surface at the mines or at the quarries, available for shipment, or in transit, or at docks or at works, and in no case is raw material to be held to include unmined minerals. The Company further covenants and agrees that the net assets of the Company are and shall always be at least \$25,000,000 in excess of the par value of the present capital stock of the Company, such par value of the present capital stock of the Company being \$30,000,000.

The last sentence in the above paragraph means in substance that the company covenants and agrees to maintain a surplus of \$25,000,000.

The effect is to limit dividends. Sometimes the same result is obtained by providing that dividends may not be paid out of previously accumulated profits and that thereafter a certain proportion of the property must be turned into an improvement fund. The mortgage securing the First and Refunding 5's of 1930, of the Pacific Light and Power Company, pro-

vides for such a fund running from 1 to 3 per cent of the amount of bonds outstanding.¹²

Other covenants pertain to the manner in which provision shall be made for retiring the bonds at maturity. For example, there may be a provision that a specified sum shall be put into a sinking fund annually out of earnings, in order to provide for retiring the whole issue at maturity; or a certain amount of the bonds may come due annually, thus effecting a gradual reduction in the total obligation under the mortgage each year.¹³

Senior mortgages, closed and open end.—A bond may be secured by a senior, or first, mortgage on the corporate property, or it may be secured by a second or third mortgage thereon. In fact, the bond may be secured by a first mortgage on some property and a second or third mortgage on other assets of the corporation.

The simplest type of mortgage bond is undoubtedly the bond secured by a closed first mortgage on all the fixed assets of the corporation. Frequently mortgages of this type further specify that all property subsequently acquired shall be included as additional security for the bonds. Such a clause is known as the "after-acquired clause." The First Mortgage Gold 4's of the Hartford City Gas Light Company, as an example, are secured by a first lien "on the entire property of the company now owned, or hereafter acquired." Furthermore, the issue is limited to \$1,000,000. From the point of view of their contract provisions, such bonds are undoubtedly favorable to the investor.¹⁴

Open end mortgages, analysis of.—The closed first mortgage issue, however desirable it may at first appear to the investor, frequently proves burdensome to the issuing corporation. When expansion takes place and subsequent borrowing is necessary the company is able to issue only debenture or junior mortgage bonds so long as the closed first mortgage is in the way. The recent tendency in corporate financing, therefore, has been to issue what is known as open end mort-

¹² See Gerstenberg, C. W., "Materials of Corporation Finance" (2d ed.), p. 163, Prentice-Hall, Inc., 70 Fifth Ave., New York.

¹³ Sinking fund and serial bonds are discussed at greater length on p. 184.

¹⁴ Some trust mortgages may be more specific than others as to precisely what shall or shall not go under the old mortgage.

gage bonds. In such cases, there is either no limit to the amount of bonds that may be issued under the indenture, or else the authorized amount is placed far in excess of current needs. In either case, however, there are definite restrictions placed on the issue of subsequent bonds under the mortgage.

In the case of the Cleveland Electric Illuminating First Mortgage Gold 5's, for example, the authorized amount under the indenture is \$30,000,000; but any bonds issued beyond the first \$5,000,000 must be limited to 80 per cent of the amount expended for additional equipment or property, and no bonds beyond the first \$5,000,000 shall be issued at any time unless the net earnings for the preceding year shall be equal to at least twice the interest charge for one year on all bonds outstanding and those immediately to be issued.

A somewhat more specific clause is found in the case of the Milwaukee Electric Railway Refunding and First Gold 5's, due in 1931. Additional bonds under this indenture may be issued at par only to refund a like amount of underlying bonds, or bonds issued under this mortgage; and for 80 per cent of the cost of additions and improvements, when net earnings available for interest, depreciation, reserves in twelve of the fifteen months preceding have equaled at least twice the annual interest charges on all bonds of this and of all underlying issues which will be outstanding after the proposed issue, or have amounted to at least 12 per cent of the aggregate par value of such bonds.

Open end issues, how secured.—The "open end" issue thus differs from the "closed" mortgage, in that additional bonds may be issued from time to time under the same mortgage, provided the value of new property acquired exceeds, by a specified margin, the new bonds to be issued, and provided, further, that earnings for a stated period have exceeded, by a specified margin, interest charges on both the old bonds and those about to be issued.¹⁵

¹⁵ The following example will assist the student in understanding more precisely how such provisions actually work out in practice.

Assume that the X corporation has \$5,000,000, 6 per cent, first mortgage bonds outstanding on January 1, 1926. The indenture under which these bonds were issued provides that new bonds may be sold up to 75 per cent of the cost of new property acquired, provided, previous earnings equaled 1¾ times interest charges on old bonds and those about to be issued.

The company, during the year 1926, acquires property at a cost of \$1,500,000.

If the provisions of the open end mortgage are properly drawn, adequate security may be furnished the bondholders and a satisfactory basis laid down for financing subsequent expansion in corporate activities. Thus, if a company had a plant worth, say, \$1,000,000, and had issued, under an open end mortgage, bonds for \$600,000, there would be an equity back of these bonds equal to 40 per cent of the value of the property. If, now, without adding to the property, more bonds are issued, the equity will be "thinned down." On the other hand, if the company retains its earnings instead of passing them out as dividends to its stockholders, and increases the value of its property to \$1,200,000, a new issue of bonds secured by the same mortgage could be made without injuring the \$600,000 of bonds, provided, of course, the same percentage of equity were established in the new property as existed in the old. In fact, \$300,000 of new bonds might readily be offered for cash at par, without affecting the equity. An ideal situation for open end mortgages is found in the case of public service corporations. In such cases there are not only the provisions of the mortgage itself to prevent the issue of additional bonds, unless the company has increased its property and earning power, but there is also the public service commission with ample authority minutely to investigate proposed security issues. Indeed, it is the plain duty of a commission to see that new bonds under an open end mortgage are not issued unless the company has ample security in assets (that is, in liquidating power), and in income (that is, interest-paying power), for both the old and the new issues. For these reasons, the tendency in public utility financing is toward the use of open end mortgages.

Secured bonds, investment position of.—First mortgage bonds, as a class, have the lowest risk of all corporate securi-

Earnings available for charges for the twelve months ended December 31, 1926, are \$550,000. (Present charges amount to \$300,000, i.e., 6 per cent, on the \$5,000,000 bonds outstanding.) It is apparent that either one of two limits, whichever is lower, will determine the amount of bonds the corporation may issue. Based on the property acquired, the company might issue \$1,125,000 of

bonds ($\$1,500,000 \times .75$). Total charges, however, must not exceed $\frac{\$550,000}{1.75}$.

or \$314,286. This capitalized at 6 per cent would give \$5,238,100. Since there are \$5,000,000 bonds already outstanding it is apparent that only \$238,100 additional bonds may be issued.

ties. Such bonds are purchased by investors who seek a minimum of risk and an interest return only, and who wish to free themselves so far as possible from all care and the burdens of management. This class of security is characterized by a constant income and moderate fluctuations in market prices, which are attributable mainly to changes in the money market. They are strictly credit instruments and, quite naturally, therefore, will move in sympathy with money rates.

Underlying, or first mortgage, bonds are the last of a corporation's outstanding securities to be adversely affected by shrinkage in asset values or earning power and, therefore, offer the greatest elements of safety in the matter of both principal and income. Nevertheless, it is impossible, even when purchasing such bonds, entirely to neglect consideration of the value of the pledged assets and their earning power.

First mortgage bonds, *as a class*, must be accorded a very high rating. Yet the investment position of a particular issue will depend on the earning power and economic value of the assets pledged as security. If the property pledged as security for a given issue has an earning capacity adequate to meet all interest charges and has a value in excess of the amount of bonds outstanding, then the bonds will be in a strong position. In fact, even though the general financial position of the obligor corporation is weak, such bonds may be perfectly sound. On the other hand, where the pledged property has doubtful value, or low earnings in relation to charges, it is the general credit position of the corporation itself that will determine the position of a given bond issue, as well as the security accorded by the mortgage.

To illustrate this point we shall consider briefly two issues of the Chicago, Milwaukee & St. Paul Railroad, which passed into the hands of receivers, March 18, 1925. The General Mortgage Gold bonds of this company, of which there were four series outstanding, amounting in all to \$146,917,000, were secured by a first lien on 6,258 miles of track, including many important divisions of the road. Another obligation of this road, secured by a first mortgage on 2,363 miles of track, consisted of \$181,664,000 of Chicago, Milwaukee & Puget Sound Railway 1st Gold 4's. Here we have two first mortgage bonds of the same road. Any substantial difference in the market yield of these two issues, therefore, must be ac-

counted for largely on the basis of security. In 1925, the year in which receivers were appointed for the road, the general mortgage bonds averaged to sell at a yield of about 5.3 per cent, which was not far from the yield on which the bonds of roads in excellent financial condition were then selling. At the same time, the Puget Sound 4's sold to net about 9 per cent.

A further analysis of these bonds shows that the first issue amounted to about \$23,500 per mile of pledged property and covered some rather important divisions of the road, while the Puget Sound 4's amounted to \$76,400 per mile of pledged track and were secured by the unprofitable Puget Sound Extension.

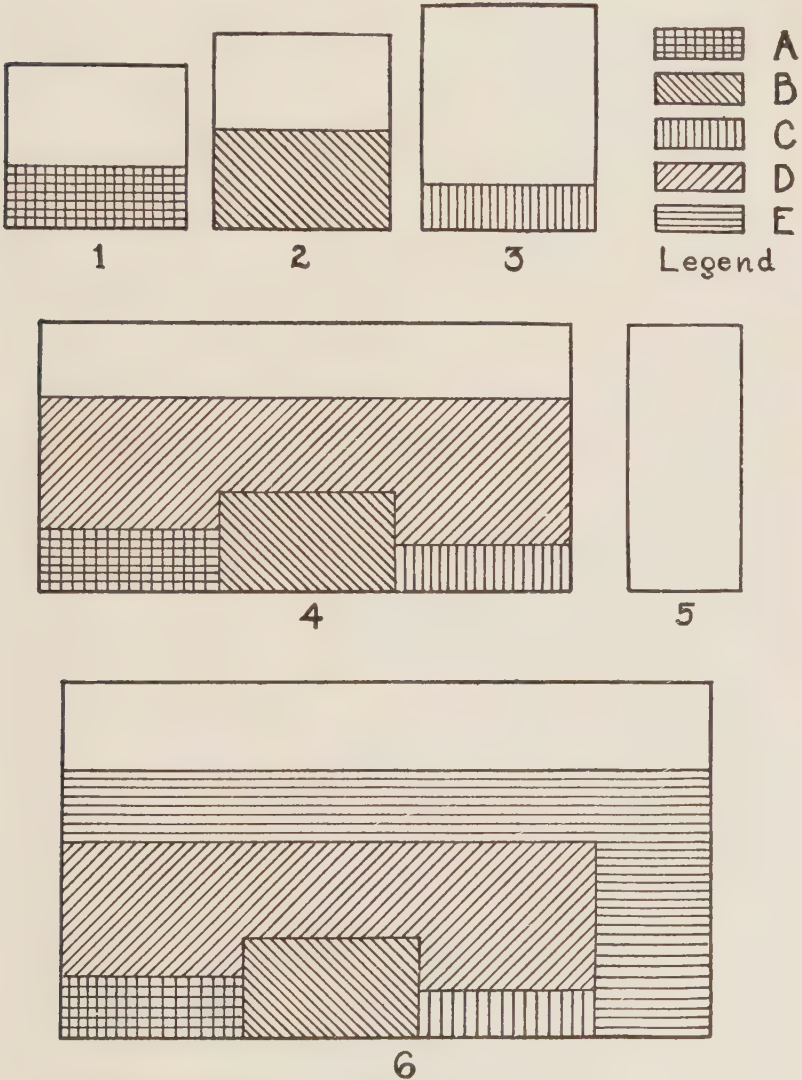
The position of the better secured issue is further emphasized by the fact that in the final plan of reorganization they were left undisturbed, while the Puget Sound 4's were required to make substantial sacrifices. In fact, this latter issue was accorded precisely the same treatment as the debenture bonds of the road. Furthermore, the holders of the Puget Sound 4's were required by the logic of the situation to accept the terms offered. The alternative course would have led the bondholders themselves to have acquired the pledged property through foreclosure. But its demonstrated value and earning power clearly indicated the futility of this course. On the other hand, if the property had had adequate earnings and value, holders of the Puget Sound 4's would have been offered more satisfactory terms in the reorganization to induce them not to foreclose.

General, blanket, and consolidated mortgage bonds.—The ordinary development of corporations, particularly in the public utility and railroad field, is accompanied by the purchase, merger, stock control, or lease of various subsidiary companies. When the parent company or the holding company undertakes financing it is often necessary to reckon with the underlying securities outstanding against the various acquired companies. Where there are already underlying mortgages on the properties of acquired companies, these are often left undisturbed, and general, blanket, or consolidated mortgages are issued against the consolidated properties subject to underlying bonds.

The following group of diagrams will serve to illustrate a

typical situation. Let us assume that three companies, 1, 2, and 3, were organized in the same line of business at different

Fig. 8.—Methods by Which Successive Mortgages Are Imposed on Consolidated Properties.



Adapted from Gerstenberg, C. W., "Financial Organization and Management," p. 185, 1924, Prentice Hall, Inc., 70 Fifth Avenue, New York.

times, and, in the course of growth, placed mortgages A, B, and C upon their respective properties, and that they then con-

solidated into company 4, the consolidated properties being valued at somewhat in excess of the separate values of the three companies. Later, company 4 placed mortgage *D* on its property. Then corporation 6 was organized as a consolidation of company 4 and company 5. The latter company had no mortgage on its property. Company 6 then placed mortgage *E* on its properties.

Company 4 would probably call the *D* mortgage a first consolidated mortgage because, although it was not a first mortgage on the property, it was the first mortgage which the consolidated company put on its consolidated property. Mortgage *E*, of company 6, would probably be called a first and consolidated mortgage. It actually has a first lien on part of the property, that which was brought into the company by company 5. In company 6, mortgages *A*, *B*, and *C* would be called underlying mortgages. Mortgage *D* is junior to mortgages *A*, *B*, and *C*, and, to a certain extent, senior to mortgage *E*. Because *E* has a direct lien on a part of the property—probably an important part of the whole company—it would hardly be called a junior mortgage. The term “general” would be more appropriate and would be more frequently used. The term “blanket mortgage” is sometimes used for such a mortgage as *E*, and indicates a mortgage on all of a company’s property, owned at the time or thereafter acquired.

Prior lien bonds.—The term “prior lien,” when attached to a bond, is apt to be confusing. Properly conceived, prior lien bonds are secured by an underlying or first lien on certain assets of the corporation. They differ from first mortgage bonds, in that they are issued during times of financial stress and by mutual agreement among the old bondholders whose claims are superseded by the prior lien bond or who deposit their old bonds in return for new prior lien bonds. Thus, where the bondholders consent, a new mortgage may be placed on the property prior in lien to all other mortgages, or with the consent of the junior bondholders, prior to the junior mortgages. Prior lien bonds are rare, because it is difficult to get the consent of bondholders having claims under old mortgages to submit to the creation of a prior lien issue.¹⁶

¹⁶ In 1922 the Missouri-Kansas-Texas Railroad Company succeeded the old M.-K.-T. Railway Company through reorganization. The new company was

General mortgage bonds.—There are many different types of bonds to which the term “mortgage” is affixed, but which are not first mortgage bonds in the full sense of the word. Here we refer to various issues, such as first and refunding bonds, general mortgage bonds, and consolidated mortgage bonds. Even this list does not cover the many issues which purport to be first mortgage bonds, and which may be first mortgage bonds only within a very restricted meaning of the word. Generally speaking, such bonds are a first mortgage on only a part, possibly an insignificant part, of the company's assets, and are supported by junior liens on the balance.

First and refunding bonds.—As the name implies, a first and refunding issue constitutes a first mortgage on some of the assets of the company, while the main purpose of the issue is to provide for retiring other bonds of the corporation as they become due, or as they may be called. In order to show the miscellaneous security which may actually be pledged to secure issues of this nature, let us consider briefly the Chicago, Rock Island & Pacific Railway First and Refunding Gold 4's. In 1925, \$154,020,000 of such bonds were outstanding. This entire issue is secured by a first or collateral lien on only 1,210 miles of track, and is secured by a junior lien on some 6,000 miles of track, subject to various underlying mortgages. It is true that the issue is further secured by the pledge of certain collateral in the form of first and consolidated mortgage bonds, amounting in all to \$98,586,000, which represents a first lien on some property, but only a junior on the remainder. The total mileage on which these bonds at present constitute a first lien, however, is so small as to be of little real value to the bondholder, when the total amount of outstanding bonds is considered.

Where the first and refunding issue is used solely to refund underlying bonds as they come due, and where the amount of the issue is increased only as refunding takes place, the refund-

authorized to issue \$250,000,000 prior lien bonds, which were secured by a first lien on 640.9 miles of track, on certain equipment, and by a collateral lien on other equipment. The prior lien bonds were also secured, either directly or through the pledge of first mortgage bonds and all outstanding stock on the balance of the property of the Missouri, Kansas & Texas Railway Company, subject to certain underlying bonds, which were to be retired. The new prior lien bonds were used in partial satisfaction of the claims of the underlying bondholders at the time of reorganization.

ing issue will eventually constitute a first mortgage on the entire properties of the corporation. On the other hand, where the underlying bonds are extended from time to time, or where the first and consolidated, or first and refunding (sometimes improvement), issue is increased for subsequent additions and extensions, perhaps already encumbered with first mortgages, the bond may be said to have risk elements worth considering.¹⁷

The first inquiry, therefore, in the case of a refunding mortgage bond, pertains to the extent of the property on which the issue has a direct first lien. And, in cases where it appears that the bond enjoys a first lien on a relatively small part only of the entire assets of the company, more reliance should be placed on the financial condition of the issuing corporation than on the character of the bond, for, in cases where the bond is secured by a first mortgage on insignificant parts of the corporate property, the bondholder is in only a slightly better condition, if any, than is the unsecured bondholder. The financial condition of the corporation then becomes of paramount importance.¹⁸

¹⁷ To illustrate how a first and refunding issue may be subordinated by extending underlying bonds we shall refer briefly to the First Mortgage Bonds of the Tacoma Gas & Electric Company, of which \$416,000 were due May 1, 1915. There was also outstanding an issue of Tacoma Gas Company Refunding Mortgage Bonds, due 1926, of which \$416,000 had been reserved to retire the previous issue when due. When the first mortgage bonds came due, however, they were extended and not retired. In this way a first lien was maintained on the underlying property and the refunding issue was denied the position in respect to that particular property to which it was entitled. In order to prevent the recurrence of this situation it is necessary that special care be taken in drawing the provisions of the refunding mortgage.

¹⁸ The refunding and improvement bonds of the New York Central rank high from a financial standpoint, but are not a desirable *type* of bond. They derive their security largely from the general financial condition of the road, since their contract provisions must be considered as very weak from the bondholder's point of view. It is only because the road itself is so strong that they sell at the present low yield.

Under the terms of this indenture, bonds may be issued up to three times the amount of capital stock of the company outstanding. Up to the first \$500,000,000, there are no restrictions on the manner of issue; beyond \$500,000,000, no additional bonds shall be issued except to refund prior debt, unless such further issue is duly authorized by the stockholders, and then only up to 80 per cent of the cost of the work done or the property acquired. This issue is a lien, next to the lien of the N. Y. C. & H. R. R. consolidation mortgage, on a long list of properties, is secured by the deposit of some collateral, and a first lien on certain leasehold rights. It appears to have a first lien on less than 300 miles of road.

Junior mortgage bonds.—Second mortgage bonds, as the name indicates, are secured by a lien subordinate to that of the first mortgage. The same idea applies to the third mortgage, and so on. The order of priority that applies to assets in case of liquidation likewise applies to the earnings of the company. The first mortgage bonds have a first claim on earnings up to the amount of their interest, after which interest is paid on the second mortgage issue, and so on. So long as earnings are sufficient to meet all interest charges, there is no essential difference between these various issues. When earnings decline and the solvency of the corporation is in question, then the position of the various mortgages becomes a matter of vital importance. Not only will the first mortgage issue be the last issue to default, but, in the process of reorganization, the first mortgage bonds will be called upon to make the least sacrifices.

In determining the investment position of junior mortgage bonds, it is necessary to consider the value and the importance of the secured assets in relation to all claims outstanding, up to and including the issue under consideration. If the amount of first mortgage bonds is very small as compared with the value of the assets and the earnings, the second mortgage bonds may, indeed, be well secured. Similarly, a third mortgage bond might be sufficiently well secured to warrant a high investment rating. There are, in fact, five successive mortgages on the property of the old New York and Erie Railroad, yet the total amount of all liens is so small in relation to the value and earnings of the pledged property that the junior bonds are, to all intents and purposes, as good as many straight first mortgage bonds. Instances of this nature, however, are the exception rather than the rule.

Under certain conditions, it is possible for a second mortgage to become, in fact, a first mortgage. Where there are two mortgages recorded on a given piece of property, a first and a second, the junior mortgage becomes a first mortgage when the original first is paid off. So long as the second mortgage remains, no subsequent mortgage with an equal or prior claim can ever be put on the property, regardless of whether the original first has been retired.

Divisional bonds.—Divisional bonds deserve some independent attention, although they differ but little, if any, from

underlying first mortgage bonds. This term was first used in referring to the first mortgage bonds secured by a section, or division, of a railroad's property. At present, however, their counterpart is found in the public utility field. When a large holding company, such, for example, as the North American Company, or the Standard Gas & Electric Company, acquires subsidiary operating companies, the underlying bonds are frequently left undisturbed. If the holding company absorbs the old company through a purchase of all its stock, the old corporation may go out of existence. The underlying mortgage bonds of the operating company, in addition to being secured by a lien on the physical property as theretofore, are also assumed by the holding company.¹⁹ Such bonds frequently are of the highest grade, and sometimes sell at higher prices than do the general mortgage bonds of the parent company itself.

Equipment obligations.—Equipment obligations are likewise secured by a pledge of specific assets, but have certain characteristics that require separate treatment. These obligations may take any of several forms, but generally represent loans secured by a lien on a specific lot of rolling stock.²⁰ Equipment securities may be said to fall into two main classes: equipment trust certificates, involving a lease; and equipment bonds, based on a first mortgage on equipment. Obligations of the first type are said to be issued under the Philadelphia plan; those of the second type, under the New York plan. We shall discuss in some detail both of these plans.

Philadelphia plan.—Under the Philadelphia plan the railroad makes an initial payment on the purchase of a definite number of cars or locomotives. This it does by entering into

¹⁹ The Union Electric Light & Power Company of Missouri absorbed the Missouri Edison Electric Company in September, 1903. The Missouri Edison Electric Company originally had outstanding \$3,400,000 First Consolidated 5's, due in 1927. Prior to 1903 these were secured by a closed first mortgage on the entire property, rights, and franchises of the company. Upon acquisition by the Union Electric Light & Power Company, these bonds were assumed by it, although still enjoying their old first mortgage lien. The Union Electric Light & Power Company is now controlled through stock ownership by the North American Edison Company. We might refer to the M. E. E. Co. First 5's as underlying, or divisional, bonds of the parent company.

²⁰ For an excellent short treatment of equipment obligations see Dewing, Arthur S., "Financial Policy of Corporations," Vol. I, Chapter V, 1920, Ronald Press, New York.

a contract with a manufacturer, who agrees to build the cars in accordance with the road's specifications. As soon as the equipment is ready, an agreement is entered into with a third individual, known as a trustee, who acquires title to the property and leases it to the road. The trustee thus has title to the equipment, and, in order to finance such part of the purchase price as has not already been advanced by the road, it sells participation certificates based both on the security of the equipment and of the lease. Payments under the lease are so arranged that interest on all certificates outstanding can be met, and a certain amount of the principal retired each year. It is usually provided that the entire principal amount shall be retired within a brief period—from fifteen to twenty years. Upon receipt of the last payment, the lessor agrees to execute a bill of sale, giving title to the property to the road.

The railroad, under the lease, further agrees to keep the equipment in a proper state of repair and insured at all times; to put name plates on all equipment leased, whereby it may be identified as belonging to the trustee, not to the road; and to assemble all the equipment covered by the lease at one point on the road and deliver it to the trustee, in case it defaults in any payments on the lease.

The chief advantage accruing to the holders of such certificates is that they are not required to go through all the formalities of foreclosure in case of default, in order to get possession of their security. This, coupled with the mere fact that the rolling stock of a road is vital to any sort of continuity of operation, puts the certificate holder in an impregnable position in case of default. Very rarely do the holders of such obligations suffer even the loss of current interest during receivership.

A further element of safety is woven into securities of this type on account of the increasing equity created each year through the retirement of a part of the original issue. Under the Philadelphia plan the lease provides for an annual rental sufficient to meet interest requirements and to provide for retiring a part of the outstanding issue. The rate at which the issue is retired exceeds the rate at which the equipment is depreciating, so that each year the outstanding obligations are protected by a wider margin of equity. The same result may be attained under the New York plan, where the bonds them-

selves are issued to mature serially. The following diagram will serve to illustrate this point:

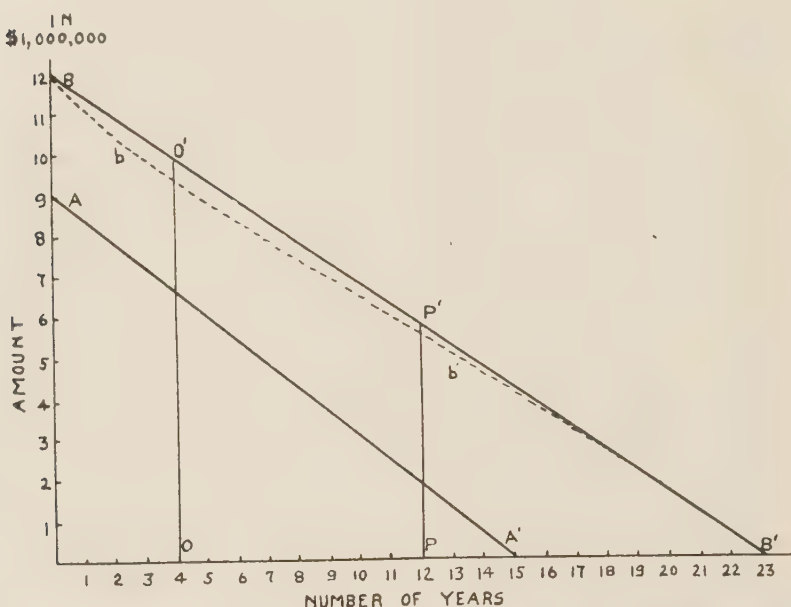


Fig. 9.—Diagram Showing Increasing Equity behind Railroad Equipment Trust Certificates When Retired Serially.

In this diagram the line AA¹ represents each year the amount of obligations outstanding. It is assumed, in the construction of AA¹, that an equal amount of bonds is retired each year, the entire issue being paid off by the end of the fifteenth year. The life of the equipment is placed at twenty-three years. The line BB¹, representing the value of the equipment each year, is constructed on the assumption that an equal amount of depreciation takes place each year. In other words, BB¹ represents the value after computing depreciation on the so-called "straight line" method. In practice, it is probable that a heavier depreciation takes place in earlier years than in later years, as represented by curve bb¹. In either case, so long as the rate at which the obligations are retired exceeds the rate at which depreciation occurs, the margin of safety, represented by the distance between the two curves, increases. This is indicated by drawing lines OO¹ and PP¹ at the fourth and twelfth years, respectively. A cursory inspection indicates

a substantially wider margin of safety at the twelfth year. This principle of amortization is widely used in corporate and mortgage financing. Its efficacy depends on a proper estimate of the rate at which the pledged assets depreciate, and the determination of a more rapid rate of amortization.

New York plan.—Under the New York plan, as opposed to what has just been designated the Philadelphia plan, the road acquires immediate title to the rolling stock and deeds it back to the trustee under a mortgage agreement. Equipment bonds are then issued by the road, which participate in this mortgage in the same way that any mortgage bond participates in the deed of trust. In this case, the equipment bond is based on the credit of the issuing road, the equipment merely constituting additional security in the form of a pledge of property. The equipment bond is, it is true, a very desirable type of investment from the standpoint of safety, but does not have all the features of certificates issued under the Philadelphia plan.

Equipment obligations, how rated.—As a class, equipment obligations constitute the safest kind of corporate security, and almost always sell at higher prices than the other bonds of the road. In fact, they rarely reflect, to the same extent as do other types of securities, the financial condition of the issuing road. The equipment obligations of weak roads, in fact, often sell at the same yields as the premier securities of other corporations. The following table, based on computations made by Professor Dewing, will serve to illustrate these points:²¹

TABLE SHOWING YIELDS ON EQUIPMENT OBLIGATIONS AS COMPARED WITH OTHER SECURITIES FOR SELECTED CLASSES OF RAILROADS

<i>Class of Road</i>	<i>Aver. Yield of Equip. Oblig.</i>	<i>Aver. Yield of Premier Sec.</i>	<i>Aver. Yield of General Credit Sec.</i>
Class A Roads—Average (roads of very strong credit)	4.137%	4.188%	4.536%
Class B Roads (roads of medium credit)	4.235%	4.613%	5.067%
Class C Roads (roads of poor credit)	4.310%	4.614%	5.294%
Class D Roads (roads in hands of receiver)	5.47%	5.83%	*

* Yield not computed, since securities were selling at prices governed by factors other than yield.

²¹ Adapted from Dewing, Arthur S., "Financial Policy of Corporations," Vol. I, p. 95, 1920, Ronald Press, New York.

Collateral trust bonds.—We have already described collateral trust bonds as bonds secured by a lien, not on physical assets, but on securities, either stocks or bonds, deposited with a trustee as collateral. This type of bond is becoming increasingly important, as holding companies continue their development in the public utility field, although the use of collateral bonds is by no means confined to public utility financing. In fact, they were first used on a large scale by the railroads, in order to combine into a single issue of marketable size a variety of underlying bonds.

Independent collateral as security.—In analyzing the investment merit of collateral trust issues, we must inquire regarding both the credit of the issuing corporation and the value of the pledged collateral. The strongest type of collateral trust bond would be one whose collateral securities possess a market quite independent of the fact that they are deposited as collateral or are connected in any way with the issuing corporation. An excellent example of a bond of this type is found in the Collateral Trust 4's, due 1948, of the Adams Express Company. In December, 1926, there were \$5,793,500 of these bonds outstanding, secured by a pledge of bonds with a value of \$12,396,197. Aside from about \$6,206,500 of Adams Express 4's, the collateral consisted of railroad bonds, many of them first mortgage bonds of very high grade. Practically all of the securities pledged enjoy a wide independent market.

The Electrical Securities Corporation, which is a subsidiary of the General Electric Company, had outstanding at the close of the year 1926 22 series of collateral trust bonds, which were secured by the pledge of public utility bonds for the most part. An examination of the collateral behind these issues also indicates that it is of high grade and easily marketable.

Stocks and bonds of subsidiary companies as security.—Somewhat less desirable as a class are collateral trust bonds secured by a deposit of the securities of subsidiaries operated by a parent company. In such instances, there is lack of diversification, for the success of the subsidiaries, as a rule, is closely linked with the success of the parent company. When financial reverses affect the latter, the pledged collateral is likewise affected. Yet the subsidiaries may still have an independent value, and, if the collateral consists of what originally were

sound mortgage bonds, the collateral issue may be considered well secured.

An example of the second type of bond would be the Collateral Trust Gold 5's of the Philadelphia Rapid Transit Company, due in 1957. This issue is secured by deposit of the shares of stock or certificates of indebtedness of various subsidiary railway lines making up the system. Another example is found in the various issues of American Telephone & Telegraph collateral trust bonds. These bonds are secured by the pledge of the stocks and bonds of a large number of subsidiary companies, and undoubtedly these securities would have an independent market value even though the parent company should become insolvent.

Where security same enterprise.—In cases where the security of collateral trust bonds covers the same enterprise as the bonds themselves, a holding company whose essential business is represented by an operating company issues its bonds against the stocks of the operating company. There may be occasions where this procedure is justified, especially where, for some reason, legal or otherwise, it is impossible to place a mortgage on the property of the operating company. But, where financing of this nature is undertaken with the idea of giving stocks the status of bonds by depositing them as security for a collateral trust issue to be sold to the public, the motives of the bankers may be questioned. A recent conspicuous example of this type of financing is found in the collateral trust bonds of the Chicago, Rock Island & Pacific, which were secured by the stock of the Chicago, Rock Island & Pacific Railway Company. Upon foreclosure, the bondholders found that their bonds were bonds in name only. Their real security consisted of the stock of the operating company before which there were many prior obligations. Where the collateral pledged is in the form of stock, it is all the more important to test its real value. This may be done in part by determining the earnings available per share, the dividends paid, and the extent to which the operating property is already burdened with prior obligations. If the operating company whose stock is pledged as collateral for a bond issue has no bonds or preferred stock outstanding, the collateral trust bonds may constitute virtually a first mortgage on the assets of the operating company. On the other hand, if the company whose stock is

pledged already has outstanding a substantial amount of bonds and preferred stocks, the value of the common as security for the collateral trust issue is lessened. Bonds secured by stocks of the same enterprise, whether of the same company that issues the bonds or of a closely allied operating company, are the least desirable of all the various types of collateral trust issues. The ultimate fate of such bonds, in the recent reorganization of the New York traction companies, is conclusive evidence of the very unsatisfactory nature of this type of security.

Consider, for example, the history of the Interborough-Metropolitan Collateral Trust $4\frac{1}{2}$ s, of which there was formerly outstanding \$67,825,000. These bonds were secured by a pledge of \$33,912,800 par value of stock of the Interborough Rapid Transit Company. Interest was defaulted on April 1, 1919, on these bonds. A rapid decline took place in their market value, the low quotations for 1921 and 1922, respectively, being 8 and $8\frac{1}{2}$. In the reorganization that followed, effective May 1, 1922, these bondholders were given the option of: (1) subscribing to the 10-year 6 per cent gold notes of the new Interborough Rapid Transit Company at par and accrued interest, in which case they received in addition 5.25 shares of the Interborough Rapid Transit Voting Trust Certificates and 5 shares of the Fifth Avenue Bus Securities Corporation Voting Trust Certificates, or (2) of surrendering 60 per cent of their bonds and receiving 2.1 shares of the Interborough Rapid Transit Voting Trust Certificates and 2 shares of the Fifth Avenue Bus Securities Corporation Voting Trust Certificates.

Summary.—We have discussed in some detail the more important types of secured issues. It appears that no definite rules of analysis can be formulated here that will apply to all cases; but we are led to the conclusion that, as a general proposition, the highest type of secured issue is one where the amount of the issue outstanding is properly limited, and where the property has a high value in relation to the total amount of bonds outstanding. Closed first mortgage bonds and divisional bonds come under this classification as well as equipment obligations. These latter securities are found to be unique, in that the property by which they are secured is mobile and of distinct value to the issuing corporation. For this reason

the holders thereof are placed in a strategic position in case of default. Open end issues may also represent a highly desirable type of security, where they are amply protected by the presence of a strong contract restricting the issue of subsequent bonds to a reasonable amount. On the other hand, bonds secured by a first mortgage on part of the property, and a general, or junior, lien on the balance, require a very close examination before their real position may be determined. Collateral trust bonds likewise vary widely in the matter of security.

Whatever may be said of the desirability of secured issues as a class, it is, nevertheless, important that each issue be considered on its own merits. A secured bond, after all, is no better, when the corporation gets into financial difficulties, than the property pledged as security, and it is at such times only that the bondholder is really concerned with the kind of bond he has.

CHAPTER VIII

BONDS SECURED PRIMARILY BY CREDIT

The fundamental distinction between secured and unsecured bonds is emphasized by a reference to the document under which each is issued. The term "indenture" may well be used to refer both to the contract under which mortgage bonds are issued and to the instrument accompanying unsecured issues. In the first case, however, the indenture contains a "mortgage deed" as well as all the other covenants with the bondholders. In the latter case, the instrument is simply an agreement, sometimes called the bond contract, in which the corporation agrees to undertake certain acts for the benefit of the bondholders. As in the case of secured bonds, so in the case of unsecured bonds: all covenants are contained in the trust agreement running to one or more trustees for the benefit of all the bondholders.

Lacking a definite pledge of property, either tangible or intangible, as a guaranty that the bond contract will be carried out, unsecured bonds, or bonds issued against the general credit of the corporation, must depend ultimately for their value on the earning capacity of the corporation. The only merit of a mortgage security lies in the preference it gives over other creditors. That is, the mortgage feature of a bond has value in the relatively superior position it gives the holder of the bonds if it ever becomes necessary to distribute the assets of the corporation as a result of financial difficulty. So long as earnings are adequate, it is a matter of legal distinction only whether the bond is covered by a lien on specific property or merely by the promise of the corporation to pay.

Civil loans.—Perhaps the best examples of bonds secured only by the credit of the obligor are found among civil loans. Bonds of the United States and of the various state governments of our country are never secured by the pledge of specific assets. The same may be said of most municipal

issues. Such bonds are issued solely on the faith that the issuing unit will have the ability and inclination to pay them when due. In rare instances only do municipalities issue bonds secured by the pledge of definite property, and, where this is done, the faith and the credit of the municipality is not pledged in addition. Such bonds are specifically payable out of the revenues of the pledged properties.

In the case of bonds issued by foreign governments, much the same situation applies. It would indeed be a blow to the prestige of any large nation to be required to give a mortgage on its assets in order to secure a loan. Where some sort of security is required, such as a pledge of customs receipts, it will be found that the borrower is a small country or is in a state of political instability.

Receivers' certificates.—Another type of credit obligation is that issued by the receivers of a corporation. When a corporation passes into the control of the court as a result of actual or threatened default, it frequently becomes necessary that cash be raised in order to continue current operations. In such cases the court will authorize its agents or receivers to issue short term notes known as receivers' certificates. These may be said to rest both on the physical property of the company as well as on its general credit, although they are not accompanied by a mortgage of the corporate property. They depend for their strength on the fact that the receiver represents all parties and hence the securities he issues may have priority over mortgage bonds. Their exact priority is usually fixed in the same decree of the court that authorizes the issue.

Receivers' certificates are usually issued for a short period to meet temporary needs and are paid off or refunded before the property passes from the jurisdiction of the court.¹ As a rule, therefore, this type of obligation must be accorded high rating for investment purposes.

¹ As a rule receivers' certificates are paid off with money received from junior security holders at the time of reorganization, and the holders are not asked to participate in the reorganized company. Infrequently they are asked to take new securities. In the preliminary reorganization plan of the Atlanta, Birmingham & Atlantic Railroad, for example, the holders of \$5,000,000 receivers' certificates were offered 40 per cent of their claim in new first and general 30 year bonds at 90, and 60 per cent in cash. In the final reorganization plan they were compelled to accept income bonds with a subordinate lien. Such treatment as this, however, is unusual.

Assumed bonds.—Where a small subsidiary corporation is merged with a larger corporation, the obligations of the merged company become those of the acquiring company. At the time of the merger the larger corporation may formally agree with the bondholders, or with the old corporation, to be responsible for the bonds. This, however, is not necessary, for, if the smaller corporation passes out of existence when its assets are acquired by the larger, then the latter automatically assumes responsibility for the bonds of the merged company. In case the assumed bonds were previously secured by the pledge of specific assets, this claim continues, and such bonds may be said to enjoy a double security: the first arising from a general claim against the credit of the acquiring company; the second, from a pledge of specific assets now acquired, subject to the bondholders' lien, by the larger company.

Assumed bonds are by no means rare in American finance, and are particularly common among railroad securities. Almost all the larger systems have some assumed bonds in their capital structure as a result of reorganization or consolidation. In the case of reorganizations, underlying or divisional bonds are often assumed by the new corporation.² The fact that so many of our present railroad systems have been put together by consolidation of divisions has also given rise to many issues of this nature.

Guaranteed bonds and stocks.—Somewhat akin to assumed bonds are guaranteed bonds. Such bonds, while implying a double obligation, that of the issuing corporation itself as well as that of the guaranteeing company, may or may not be secured by the pledge of specific assets. The most common form in which the guaranty arises is when a large corporation leases a small corporation and guarantees under the terms of the lease a rental sufficient to pay interest on bonds of the lessor corporation, and frequently dividends on the stock. In other cases the guaranty is in the form of a direct contract with the guarantor and is indorsed on the bond itself.³

² The present Erie road has in its capital structure some of the original first mortgage bonds issued as early as 1847.

³ The Southern Pacific Railroad guarantees the bonds of the Houston, East & West Texas Railway by the following indorsement on each bond: "For value

Where the stock of the leased corporation is also guaranteed by the lessee company, it must at once be classed as a fixed obligation and not as a proprietorship security. Guaranteed stocks assume most of the characteristics of bonds and are bought by the same class of investors who buy bonds.

The guaranty of dividends on the stock of leased companies may apply to its preferred stock or to both preferred and common. In fact, after the guaranty has been effected, by means of establishing a rental under the terms of the lease sufficient to pay necessary expenses and a stated rate of dividend, the distinction between preferred and common stocks is, for all practical purposes, done away with.⁴

Guaranteed bonds are not so strong, legally, as assumed bonds. In the former case, the bondholder has the double obligation, it is true, of both the issuing, and the guaranteeing, company. However, in the event of failure on the part of the guaranteeing company to meet payments under the contract, at best, the result of attempted enforcement will be to throw the corporation into the hands of receivers who, ordinarily, will repudiate the guaranty in case the leased property is not a paying proposition. The holders of guaranteed bonds must then proceed to establish the extent to which they have been damaged by the failure of the guaranteeing corporation to carry out the contract before they are in the position of a judgment creditor. In the case of assumed bonds, on the other hand, the bondholders are in precisely the same legal position as the bondholders of the corporation assuming the bonds. Assumed bonds are a direct obligation of the assuming corporation and are on a parity with other valid debts.

received, the Southern Pacific Company hereby guarantees unconditionally the punctual payment of the principal and interest at the time and in the manner therein specified."

⁴ There are abundant examples of guaranteed stocks in American railroad finance. The New York, New Haven & Hartford, under the terms of a 99-year lease, agrees to pay a rental to the Providence & Worcester Railroad Company sufficient to equal interest on its bonds, organization expenses, and 10 per cent on its capital stock. The Cincinnati, Hamilton & Dayton Railroad, under a perpetual lease, guarantees principal and interest on the bonds of the Dayton & Michigan Railroad Company, as well as a rental sufficient to pay 8 per cent on the preferred and 3½ per cent on the common stock of the company. This lease was later assumed by the Toledo & Cincinnati Railroad Company, which is a subsidiary of the Baltimore & Ohio. Dividends are guaranteed on the stock of the Northern Railroad of New Jersey by the Erie, and on the Northern Railroad Company (of New Hampshire) by the Boston & Maine.

It is necessary, therefore, in determining the investment position of guaranteed issues, to study not only the credit of the guaranteeing company but also the credit status of the obligor company—the earning power and the strategic importance of the leased property to the lessee company.⁵

Joint bonds.—Joint bonds are very similar to guaranteed bonds, except that there is a joint guaranty by several corporations to pay the interest and the principal of the bonds. Such issues are ordinarily the result of undertaking to build structures, branch lines, or terminal facilities, which are to serve several companies jointly. It is common practice for such projects as larger terminals, wharves, docks, and bridges, which are to be used by several corporations, to be financed jointly by all the companies interested. Usually a small corporation is formed solely for the purpose of taking title to the property and operating it. This company then issues bonds to secure a part or all of the funds necessary to acquire the property. Such bonds, however, are also guaranteed by the various companies which use its facilities. These companies generally divide up the stock of the terminal company and enter into lease agreements for the use of its facilities, each paying rent in proportion to its use of the property.

Such bonds, where they are accompanied by a mortgage on the terminal property, are secured both by the credit of the participating companies and the property itself. For example, the Boston Terminal First Mortgage Gold $3\frac{1}{2}$'s are not only a lien on the South Station at Boston, the train sheds, and about thirteen miles of track, but are further secured by lease, the New York, New Haven & Hartford, the Boston & Albany, the Old Colony, and the Boston & Providence railroads, each being jointly liable for any deficiency in the case of foreclosure of the bonds.

The investment strength of such bonds will depend in part on the value of the property itself and also on the character and multiplicity of the guarantors. The strategic importance of the property is important, to be sure; but, in case of failure

⁵ There is often a strong temptation in the case of unprofitable leases to find some way to break them, especially if the lessee corporation is in a weak financial position. On the other hand, where the leased property is profitable or occupies a position of strategic importance, the lessee corporation may go a long way to avoid any default in the provisions of its guaranty.

of the lessor companies, ordinarily, the bondholders would have property with little or no income on their hands. For this reason we are justified in considering bonds of this nature in part as general credit bonds. Where secured by the pledge of property, the underlying assets may be of such special nature as to have little or no independent value.

Debenture bonds; investment position of.—The most important class of straight credit obligations which are in no way secured by direct or indirect pledge of property are known as "debenture" bonds. Bonds of this nature are merely promises to pay a certain sum of money at a given time. In fact, they do not differ materially from a promissory note, except that they are generally issued under the deed of trust previously described.⁶

In the purchase of debenture bonds, therefore, one must look entirely to the earning power and credit position of the corporation for the payment of the interest and the ultimate return of the principal. And, in the case of failure, the debenture bondholder will find that his claims are junior or subordinate to those of all the secured bondholders. Furthermore, the debenture bondholder does not have the right to foreclose, in case the corporation fails to carry out its part of the bond contract, a right which often proves of real value to the secured holder in times of financial difficulties.

In the case of corporations which have no secured issues outstanding, the position of the debenture bonds is improved, but even here the debenture issue does not have the same status as a mortgage bond. A debenture issue, even though it represents the only item of funded debt on the balance sheet of the corporation, may participate ratably only in the assets of a liquidating corporation with the other unsecured creditors, whereas the first mortgage bondholder enjoys a prior claim in so far as the assets specified in the mortgages are concerned. That is, mortgage bondholders have the privilege of foreclosing in the event of failure, of forcing a sale of the

⁶ The student will do well to refer to the agreement under which the 6 per cent notes of the American Power & Light Company were issued. See Gerstenberg, C. W., "Materials of Corporation Finance," p. 291, 1915, Prentice-Hall, Inc., 70 Fifth Ave., New York. This agreement should be compared with the corporation mortgage in order to emphasize the fundamental difference between secured and debenture bonds.

pledged property, and of bidding this in, if desirable, for their own interests. Furthermore, such property is not attachable by the other creditors.⁷ Also, where the pledged assets are insufficient to meet the claims of the secured bonds, these bondholders have a further claim which participates equally with the unsecured holders in the remaining assets.⁸

Position of unsecured bondholders in event of reorganization.—As a result of this situation, the unsecured bondholders usually fare much worse in cases of reorganization than do the secured bondholders. The latter hold the upper hand, so to speak, in that, if the reorganization plan does not satisfy them, they may always foreclose and assume title to the fixed assets of the concern by bidding in the property. In case

⁷ Except in respect to specific claims, such as taxes, receivers' certificates, mechanics' liens, etc.

⁸ The following simple example is given to show the exact order of precedence for the claims of the various creditors of a corporation in case of failure and liquidation.

The balance sheet of the corporation at time of failure was as follows:

<i>Assets</i>		<i>Liabilities</i>	
Plant and Equipment.....	\$1,000,000	Common Stock	\$ 500,000
Inventories	400,000	Preferred	300,000
Accounts Receivable	250,000	First Mortgage Bonds.....	500,000
Cash	50,000	Debenture Bonds	400,000
Deficit	300,000	Accounts Payable	300,000
	<u>\$2,000,000</u>		<u>\$2,000,000</u>

Let us assume that the affairs of the corporation are wound up and that the assets are liquidated. The following amounts we will further assume are realized from the various assets in liquidation:

Plant and Equipment.....	\$450,000
Inventories	100,000
Accounts Receivable	200,000
Cash.....	20,000 (after allowing expenses of liquidation)

In view of the fact that the plant and equipment were pledged as specific security for the mortgage bondholders the entire \$450,000 realized therefrom must be applied to their claim. In respect to the \$50,000 remaining unsatisfied, they will be in the same position as the other unsecured creditors. The remaining \$320,000 must be prorated over the unsecured claims, amounting in all to \$750,000 (\$50,000 first mortgage bondholders, \$400,000 debentures, \$300,000 accounts payable), this would leave the debenture holders with 42 2/3 cents on the dollar. The first mortgage holders, however, will receive in all \$450,000, plus 42 2/3 per cent of \$50,000, or \$471,330. This is equivalent to 94.3 cents on the dollar.

other buyers appear at the foreclosure sale and bid more than the amount of the secured claims, the secured bondholders are entitled to 100 per cent of their principal and all interest in arrears before anything can be paid to the remaining creditors. And, where other bidders fail to appear, or where they bid less than the amount of secured bonds outstanding, a purchase may be made by the bondholders themselves, who, naturally, will bid, by turning in their bonds up to the amount of the purchase price. In such cases, therefore, it is not necessary that any cash should be put up in order to acquire the property.

Chicago, Milwaukee & St. Paul reorganization.—To cite a specific example of the manner in which different classes of bondholders fare in case of failure and reorganization, we will again consider the recent Chicago, Milwaukee & St. Paul reorganization. Here we find that \$181,370,400 of underlying bonds were left undisturbed. Bonds with relatively poor security, such as the First and Refunding "A's" and "B's" and also the various issues of unsecured bonds, were required to take for each \$1,000 bond of the old company turned in, \$200 par value, new 50-year, 5 per cent, mortgage gold bonds and \$800 new, 5 per cent adjustment mortgage bonds.⁹ These latter bonds are known as income bonds and represent a contingent claim in respect to interest rather than a fixed claim.¹⁰ The new 50-year mortgage bonds were quoted at about 82 at the time the reorganization plan was finally agreed upon and the adjustment mortgage 5's were quoted at about 55. The cash value of the securities received in exchange for a \$1,000 bond of the less secured classes was thus around \$600.

Virginia Carolina Chemical reorganization.—Another pertinent illustration of the relative position of secured bonds as compared with unsecured issues in times of difficulty is found in the case of the Virginia Carolina Chemical reorganization, consummated in 1925. Here the old first mortgage bondholders received for each \$1,000 bond, \$595 in cash and \$510 in prior preferred stock of the reorganized company, which had a market value at the time of reorganization of about

⁹ See *Commercial and Financial Chronicle*, Vol. 121, p. 2516, for complete analysis of plan as finally agreed upon.

¹⁰ See p. 186, for complete discussion of income bonds.

\$93 per share, thus giving them the equivalent of a total cash return amounting to about \$1,027, an amount actually in excess of the par value of their claims. The old 7½ per cent, 15-year debentures, on the other hand, received, in the reorganization, no cash, \$1,225 new participating preferred stock, and 20 shares of common. The preferred had a market value of about \$46 per share and the common of about \$10 a share at the time of reorganization. The debenture holders, therefore, received the equivalent of \$763 in cash for each \$1,000 bond of the old company.¹¹

Desirability of unsecured bonds as investments.—The fact that the debenture bonds of a corporation generally fare poorly in case of reorganization should be clearly borne in mind when purchasing unsecured corporation bonds, for, in the purchase of bonds, safety of principal is of extreme importance. The opportunity of profit through appreciation in the value of an investment bond is not especially large. Losses, on the other hand, may be substantial, in case the company meets financial reverses. The additional yield on debentures, therefore, must be considered as a premium for the extra risk involved in such issues. The natural question is, Does this additional return compensate for the chances of loss in principal and interest which such bonds as a class suffer? It is the writer's opinion that the purchase of debentures should be confined to the strongest companies, and even here one's holdings should be carefully watched. A study of almost any important reorganization will show conclusively that the debenture bondholders occupy a position inferior to the secured bondholder, and that they generally suffer a reduction in the principal value of their holdings or are required to take preferred stock in lieu of their contract claim in the ultimate plan of reorganization.

Protection of unsecured issues: restriction against new bonds.—On account of the relatively weak position in which the debenture bondholder is placed, one frequently finds collateral provisions in the bond contract or indenture which are designed to give added security to the holder of such bonds. Such special features aim for the most part to prevent any

¹¹ For full details of reorganization see *Commercial and Financial Chronicle*, Vol. 121, p. 853.

subsequent weakening of the debenture bondholders' present position, and are not unlike the covenants sometimes found in the case of secured issues.¹² For instance, a clause is frequently inserted to the effect that no other bonds may be subsequently issued without giving the debenture holder equal security therewith.¹³ The effect of such a provision is, of course, favorable to the purchaser of the bond, in that it prevents the corporation from later mortgaging a part, or all, of its assets to the disadvantage of the debenture holder. Weak as the position of the unsecured creditor is, it becomes weaker in cases where the corporation's assets are subsequently mortgaged to new creditors with a prior lien on the properties. The added cash obtained from the sale of the new bonds may fail to make up for the lowered position which the debenture holder is required to take in the capital structure of the corporation. In theory, provisions such as the preceding are sound. In practice, however, their efficacy is sometimes doubtful. It frequently happens that the corporation undertakes to finance a program of permanent improvements by means of current bank loans. After this goes on for a period, the corporation's current liabilities, represented in part by bank loans, become so large that it is forced to fund these into an issue of bonds. It usually happens at such times that the corporation is forced to bring out a mortgage loan, on account of its credit position, and consent of the debenture holders is given, not from desire, but from necessity. In other cases, it sometimes happens that a corporation gets into financial difficulties for one reason or another and might be saved if it could secure additional funds. On account of its then low state of credit the only source of borrowing lies in a first mortgage issue. This may, however, be prevented by the short-sightedness of the debenture holders themselves who are unwilling to consent to the prior issue.

Cash position, maintenance of, by restrictions.—In other cases there are restrictions set up in the indenture against the

¹² As previously indicated, see Chapter VII.

¹³ New York, New Haven & Hartford Convertible Debenture 6's, 1948, as well as several other debenture issues of this road, had such a clause. Thus, when it became necessary, in 1922, to put out a large first and refunding issue to refund certain government obligations and bonds then coming due, the old debentures were required to be equally secured under this mortgage.

payment of dividends on the corporation's stock issues, where such payment reduces the cash ratio of the company below a certain point.¹⁴ A similar result may be accomplished by providing that net current assets must always be maintained at a certain per cent of the bonds outstanding, or that current assets must be maintained at a certain ratio in respect to current liabilities. The purpose of such provisions is to assure the unsecured bondholder that sufficient cash will always be available to pay current interest on the bonds, to provide for principal at maturity, and to guard against any ill-advised expansion by means of bank loans. In so far as such covenants prevent the corporation from using cash for dividend purposes when such cash should remain in the business, they are sound. On the other hand, when earnings decline, or when losses appear, it takes more than a mere covenant in an indenture to produce net quick assets. For this reason even such provisions are powerless to protect the debenture holder in times of financial stress.

Sinking fund provisions.—The inclusion of sinking fund provisions is another method of strengthening unsecured bonds. Where the retirement of an issue on a serial basis is called for, the same end is accomplished. In both cases the corporation is required either to set aside a certain amount of cash out of earnings each year for the purpose of building up a sinking fund to retire the bonds at maturity, or to retire a certain amount of the bonds annually. In this way the equity behind the issue is increased regularly. Year by year the issue becomes better secured, either through a growth in the sinking fund assets or by a reduction in the total amount of the issue outstanding.

Of course much will depend, in the case of sinking fund bonds, on the manner in which the sinking fund is provided for. It is far better, from the bondholders' standpoint, that the amount paid into the sinking fund should be a definite and predetermined sum. Where payments into the fund are based on a percentage of earnings, there is no assurance that there will be any accumulation in some years. It is also advantageous to the bondholder to have a segregated fund provided for and

¹⁴ See provisions in Jones & Laughlin Company mortgage, already referred to on p. 155.

placed under the management of an outside trustee. Otherwise the fund is likely to be reinvested in the plant and the general assets of the corporation and thus be unavailable to the bondholders when needed.¹⁵

Convertible features.—In still other cases the right to convert bonds into the stock of the company is given.¹⁶ This provision is not so much a matter of protection as a feature of attraction. The conversion feature, when present in the case of a bond, has a speculative value, in that it becomes valuable when the stock into which the bonds may be converted rises above the so-called conversion point. Corporations with a somewhat weak credit standing, therefore, issue bonds with this feature attached. The purchaser of the bond, while he takes somewhat more than a normal risk, acquires the right to anticipate a profit which, ordinarily, is not found in the case of bonds.

Value of such collateral provisions to bondholder.—These are the more important collateral features which are frequently written into the indenture under which debenture or unsecured bonds are issued.¹⁷ Whereas, modifications of such protective covenants are sometimes found in the case of mortgage, or secured, bonds, they are less common than in the case of debenture bonds. As to the value of these various safeguards opinions differ. Probably the most effective provisions are those which prevent the issuance of bonds at a subsequent date with prior claims, or the payment of dividends when the cash position of the company is thereby jeopardized. It may be said in respect to all such features, however, that they fail to reach the real problem. When the management

¹⁵ See p. 671 for treatment of, in respect to municipals.

¹⁶ For a more complete description of convertible bonds see p. 196.

¹⁷ A good summary of such restrictions may be found by studying the indenture under which the 7½ per cent bonds of the E. I. Du Pont de Nemours Co., 1931, were issued. Briefly the provisions are: (1) The company will not place any liens upon any of its property without ratably securing these bonds therewith. (2) The company will at all times maintain net current assets equal to not less than 150 per cent of the principal amount of bonds then outstanding. (3) The company agrees not to pay dividends upon any of its capital stock, if thereby the amount of its total current assets shall be reduced to less than 125 per cent of the company's current liabilities plus the amount of bonds outstanding. (4) Certain restrictions are set up against the sale or distribution of certain stocks and bonds of the General Motors Securities Co., held by the Du Pont Company.

of a corporation is unable to produce earnings, assets are dissipated and the unsecured bondholders' position becomes dangerous. When earnings are satisfactory, the existence of protective features is quite unnecessary. The investor, therefore, will do better to study the prospects and financial condition of the company than to rely too much on the various provisions in the indenture of an unsecured bond.

The essential characteristic of debenture bonds, after all, is the fact that they are unsecured obligations and are subject to the inherent weaknesses arising from this situation. While inclusion of collateral features in the bond contract may serve to restrict the management to conservative policies, and, hence, to strengthen the financial condition of the company, or to prevent it from becoming weak in some cases, when general mismanagement or financial reverses reduce earnings, such provisions as generally appear in the indenture of unsecured bonds are of little value to the holders thereof.

Income or adjustment bonds.—Income or adjustment bonds are usually issued as a result of financial reorganization and are offered to the less advantageously situated security holders and creditors of the old company in exchange for their claims. Adjustment or income bonds may be unsecured, but are often secured by a junior lien on certain property of the corporation. Even where they are secured in this way such issues must, nevertheless, be considered essentially as bonds secured by credit and earnings, for interest thereon is not in the nature of a fixed and definite claim but is made contingent on earnings.

The Seaboard Air Line Railway Adjustment Mortgage Gold 5's furnish us with an excellent example of this type of bond. Interest on these bonds is cumulative at the rate of 5 per cent per annum from November 1, 1909, and is payable out of surplus earnings and income of the preceding six months. Under the terms of the indenture, if surplus after charges for the twelve months' period, ended April 30, or October 31, is sufficient to pay $1\frac{1}{4}$ per cent on the bonds, or a multiple thereof, then the company must pay that amount up to $2\frac{1}{2}$ per cent for the pro rata six months' interest up to August 1, or February 1, as the case may be. But, in determining the net applicable to interest payment on the bonds, \$50 a mile, or such amount as the board of directors may determine for

the entire operated mileage, may be deducted from surplus after charges for additions, improvements, and other corporate purposes. This issue of bonds is secured by a general mortgage on the entire property of the company and on all property hereafter acquired, except certain stocks and bonds, subject to prior mortgage bonds in the amount of approximately \$148,000,000.

Another good example of an income bond is found in the Missouri-Kansas-Texas Adjustment 5's. These bonds were issued at the time this road was reorganized in 1922, in partial exchange for certain of the less secured bonds of the old company. The interest on these bonds is payable out of the net income of the road; but, prior to January 1, 1925, only such portion as the board of directors may determine, but not less than 50 per cent, shall be required to be so applied, the remainder being available for capital expenditures. Prior to January 1, 1925, interest was noncumulative, thereafter it is cumulative. Furthermore, no dividends on any class of stock shall be paid or set aside for payment in any one year, unless the full cumulative interest on the adjustment bonds shall have been paid or set aside for payment.

The greatest objection to income bonds arises over the uncertainty of interest payments. The determination of net earnings is partly dependent upon accounting practice. Thus, whereas gross earnings and direct operating expenses may be determined precisely, net earnings are dependent in part on the depreciation charged by the management and its policies in respect to maintenance. The latter items involve judgment, and the stockholders of a corporation may find it advantageous to charge heavy depreciation and to treat debatable capital items as expense, thus keeping earnings down for a considerable period. Such a policy really permits the property to be built up at the expense of the bondholder.¹⁸

¹⁸ The Central of Georgia railway, for example, did precisely this. With three issues of income bonds outstanding, the management for years charged heavy depreciation and virtually rehabilitated the road out of earnings. As a result, when earnings were so published as to show income available for the interest on the bonds, there was sufficient also to pay dividends on the stock.

CHAPTER IX

SPECIAL TYPES OF BONDS

There are several types of bonds, or, perhaps better, special features sometimes found in the bond contract which deserve more than passing attention. In as much as these special features could not logically be treated as especially related to either secured or unsecured issues, it was considered advisable to reserve discussion of them until the present chapter.

Callable bonds.—The first feature that will be treated more fully at this point pertains to callable bonds.¹ The presence of this clause in a bond contract may be found, quite regardless of the type of bond. Thus may we find a debenture bond, a first mortgage bond, a convertible bond, or almost any type of bond, with the “call” feature incorporated in the deed of trust under which the bonds were issued. The “call” feature may be described as a clause contained in the deed of trust, which gives to the issuing corporation the right to redeem, that is, to pay off, a portion or all of the bonds issued thereunder before maturity. The conditions under which this may be done will vary in the case of different bonds, although the general features surrounding the call privilege are fairly well standardized. The corporation is customarily required to give notice to the bondholders of its intention to exercise its right a certain number of days in advance of the date on which payment is to be made, such notice usually being in the form of advertisements appearing in specified newspapers. This method of notification is necessary, since it is obviously impossible to notify the holders of coupon bonds by mail. Such bonds are transferable by delivery and require no transfer

¹ The term “redeemable” bonds is frequently used in describing such a security and conveys the same meaning. Where only a part of an issue of bonds is called, and the bonds to be called are drawn by lot, then the bond may be called a “drawn” bond. •

books at the office of either the corporation or the trustee. In most cases the "call" privilege may be exercised at certain specified times only, usually at interest dates. And, finally, the corporation is usually required to pay somewhat more than par if it elects to call its bonds. That is, bonds are callable, not at par, but at a figure slightly in excess of par. The amount of this premium will naturally vary according to the circumstances involved, but does not generally exceed 5 per cent of the par value of the bond. A typical example of the manner in which such provisions are often stated may be found in the Jones & Laughlin mortgage.²

In case the company shall desire to exercise such rights to redeem and to pay off such entire issue of bonds, it shall advertise in two daily newspapers of general circulation, one published in the Borough of Manhattan in the city of New York and one published in the city of Chicago, Illinois, at least once a week for four successive weeks (the first publication to be not less than thirty days, and not more than forty days, before the date of redemption specified in such notice), stating that the Company has elected to redeem and pay off all of the bonds, and that on such interest payment date there will become and be due and payable upon each of said bonds at the financial agency of the Company in the Borough of Manhattan in the City of New York the principal thereof, together with the premium as aforesaid and accrued interest to such date. A similar notice shall be sent by the company through the mails postage prepaid at least thirty days prior to such redemption date to the registered holders of bonds whose addresses shall appear upon the transfer register.

Advantages to corporation of callable bonds.—From the corporation's standpoint the right to redeem or call all or a part of an issue of bonds has several advantages. Consider first the case of a corporation which has in its bond contract a provision requiring the setting aside annually of a certain sum of money in a sinking fund for the purpose of retiring its bonds at maturity. The proper investment of such a fund naturally creates a problem. It is generally agreed, however, that no better investment for sinking fund purposes could possibly be found than the bonds of the corporation itself. And, where the right to redeem or call its bonds at a definite price is given to the corporation, an adequate supply of such bonds

² Gerstenberg, C. W., "Materials of Corporation Finance," p. 222, 1915, Prentice-Hall, Inc., 70 Fifth Ave., New York.

for the fund is automatically created. Another advantage of the "call" feature is found in the case of a corporation which originally started in a small way and, at some time in its development, put out a closed issue of first mortgage bonds with an "after acquired" clause in the bond indenture. We have already seen that the effect of such a clause is to cause all subsequent additions to the property account to be included under the senior mortgage. Such a corporation is obviously at a disadvantage, if it desires, at a subsequent date, to do further borrowing. It cannot give another first mortgage, even though the property would warrant this procedure from the standpoint of values. Additional borrowing, therefore, must be undertaken on the basis of junior or debenture issues, which require higher interest rates and consequently heavier fixed charges. If the underlying issue of bonds is callable the corporation is able to retire it and to engage in a more comprehensive financial program. In other cases, where a corporation consists of a number of consolidated properties, or where its growth has resulted in a number of different issues of bonds, and, consequently, a complex capital structure, the presence of the call feature in its bond contracts enables it to effect greater simplicity by calling its outstanding bonds and issuing one consolidated issue.

As a rule, however, the essential gain to the corporation from the "call" feature lies in the reduction or elimination of fixed charges which may result from calling the bonds. Immediately after the War, for example, corporations of the highest grade were unable to borrow money at less than $6\frac{1}{2}$ or 7 per cent, regardless of the type of security they might offer. Such a situation was almost sure to be temporary, yet it put the corporation which had to borrow, either for expansion or refunding purposes, in a difficult position. True, such a corporation might have borrowed by issuing short term notes with a high coupon rate of interest; but this would result in an inflexible maturity date in the near future, which might require further financing on disadvantageous terms and with additional banking fees. A better solution for conditions of this nature lies in the issue of bonds with a high coupon rate, with the right reserved to the corporation to redeem all or part of the issue on the terms customarily worked out in the indenture under which callable bonds are issued.

The same situation may at any time present itself to a new corporation, or one whose credit is not at the moment high enough to permit borrowing on advantageous terms. Such corporations must pay high rates for the money they obtain. Yet, as they become better established, their credit position improves. As this process goes on a time will come when they are able to borrow at much lower rates of interest. At such times it is highly advantageous to the corporation if it can retire its high rate coupon bonds with funds secured from the sale of new bonds bearing a low rate of interest, for in this way a substantial saving in fixed charges will result.

The callable feature and the investor: the call premium.—From the investor's standpoint, however, the callable feature cannot generally be said to offer very many attractions, for the principal reason that the time the corporation chooses to exercise its right to call is either when interest rates are low and bond prices are correspondingly high, or after the corporation's credit has been so firmly established that the investor would prefer to keep his original, well paying investment. In either case, the investor normally prefers to have the bond, which by that time is showing an attractive yield on his original investment, rather than the funds. In other words, the exercise of the call feature by the corporation always creates a problem of reinvestment.³ It is true that the bondholder is partly compensated for this situation when the call price is above the par value of the bond. In such cases the investor will receive a profit or premium above the cost of the bonds. This premium is generally so small, however, that it does not recompense the investor for the loss in time and interest which he usually experiences in the reinvestment process. This may be shown by taking a specific instance.

Result, when call premium low: Detroit Edison 8's, 1931.—On January 10, 1925, the Detroit Edison Company called its 8 per cent convertible gold debentures due in 1931, at 103. These bonds were originally sold in 1921 at a price of 100. One might draw the conclusion that the difference between the original price, par, and 103, or \$30 per \$1,000 bond, would

³ The real effect of callable bonds on the investor and a comparison of this type of bond with convertible issues is clearly set forth in an article by Smith, Edgar L., "Speculation and Investment," *Atlantic Monthly*, October, 1925, p. 542 ff.

have constituted a sufficient cash reward for having the bonds called in 1925. Yet it must be considered that the average investor at that time was primarily interested in keeping his principal working, and that these bonds were yielding him, even at 103, a return of 7.35 per cent. In January, 1925, he could not have purchased an issue of equal merit to yield over 5.5 per cent. He thus lost the equivalent of 1.85 per cent per annum on his principal for the period from 1925 to 1931. His gain, in this case measured by the \$30 in premium, evidently failed to offset the loss he suffered through a reduction in current income.⁴ He would have made more in the long run had the bonds not been paid until maturity and had he received the 8 per cent current income for the next six years, instead of, say, 103×5.5 , or \$56.65 per \$1,000 of old bonds that were called.

Result, when call premium high: Goodyear Tire & Rubber 8's, 1931.—There are instances, on the other hand, where the call price is set so high that it has a real value to the investor. The Goodyear Tire & Rubber Company, when reorganized in 1921, was unable to offer the highest type of security to the investor, because of its then low state of credit. In order, therefore, to attract funds, it was compelled to incorporate especially attractive terms in respect to the securities it offered to the public. Thus, do we find the company issuing first mortgage, sinking fund bonds, with provisions that \$750,000 par value of bonds shall be retired semiannually, beginning with November 1, 1921, by drawing by lot, at 120 and interest; a rate that provided for retiring the entire issue by maturity at a premium of 20 per cent. The strong contract security behind these bonds, the high premium at which they were callable, and the possibility attaching to a given bond that it might enjoy an early call made them an attractive investment at the time they were originally offered, despite the then relatively low state of the company's credit.⁵

⁴ We shall not enter here into a mathematical discussion of all the facts involved in cases of this kind, for the matter is necessarily complicated. A precise estimate as to what extent the investor gains or loses through having his bonds called would involve consideration of the original purchase price, the length of time the bonds have already run, the time of maturity, and the rate of return the investor can get through reinvestment of his principal.

⁵ Comparing this situation with the Detroit Edison Company's Convertible 8's, we find that at the call price 103 the latter yielded 7.35 per cent at time of

Changing premium rates.—Whereas, we have assumed that the price at which the bonds of a corporation may be called is a definite and fixed figure, it is, nevertheless, true that this premium may be made to vary in accordance with the length of time the bond runs before maturity. In the case of the Cleveland Electric Illuminating First Mortgage Gold 5's, due in 1939, which may be taken for illustrative purposes, the contract provides for redemption of the issue in whole or in part, at the company's option, on April 1, 1924, at 107½, or any interest date thereafter, by giving proper notice, at a price decreasing by ½ of 1 per cent yearly to maturity. The logic of this provision is seen when one considers that the amount of the premium is of increasing significance as the bond approaches maturity. For example, it would be out of the question for the company to call the issue at 107½ only a year, say, before maturity, or even two years. Rather than to pay such a premium for so short a time, the company would do better to wait until the bonds matured. Likewise the gain to the investor would be correspondingly large. He would, in such a case, be handsomely paid for having his bonds retired only a short time before they would normally mature. Mathematically, there is a rate at which the premium should be decreased as maturity is approached, in order to maintain it at an equal value to the investor and to make the terms of equal burden to the corporation. This is approximated by the ½ of 1 per cent annual decrease in the case at hand.

Right to call all or part of issue.—There are cases in which the corporation retains the right to call the whole or any part of a given issue. In other cases the redemption right is restricted to the entire issue or to a limited portion of it. Thus the Jones & Laughlin First Sinking Fund Gold 5's are callable as a whole at 105 on any interest date on 30 days' notice, or in part for sinking fund on any May 1. In still other cases the issue must be called in its entirety or not at all. Westinghouse Electric & Manufacturing Company Gold 7's, due in 1931, were callable only as a whole on May 1, 1926, or at any subsequent interest date at a premium equal to

call, whereas, on May 1, 1925, the yield for Goodyear 8's at 120, the call price, was less than 6 per cent. The high premium received by the original purchaser of Goodyear bonds was almost all gain, for at 120 the current yield could easily have been duplicated through purchase of similar grade bonds in the market.

$\frac{1}{2}$ of 1 per cent for every six months intervening between redemption date and maturity. This issue has since been called in its entirety. Such a contract has some slight advantage to the holder, in that it lessens somewhat the chances of the bond being called. A corporation may feel less inclined, or be less able, to provide funds for calling a whole issue than a part of it.

The call feature and price fluctuations.—There is another aspect to the call feature as a part of the bond contract which is closely tied up with the economic problems arising from changes in the price level and their effect on borrowers and creditors. Perhaps the greatest risk which the purchaser of high grade bonds takes at any time arises from changes in the purchasing power of the dollar. In current market terminology the purchaser of bonds goes long of dollars and short of the cost of living. His purchase of bonds assumes the payment of a specific number of present dollars in return for the promise of a certain number of future dollars. As against this transaction, however, one must consider the requirements of the investor, during the life of the bond and at its maturity, in terms of goods. The only use that dollars can possibly have comes from their command over goods. If, during the life of the bond, dollars shrink in purchasing power the purchaser of the bond, or the payee, loses. Similarly, if the purchasing power of the dollar increases the corporation loses. The call feature offers a hedge to the corporation, in that it permits the corporation to pay off its obligation in full when the purchasing power of money is high or when interest rates are low. Similarly, this feature creates a further hazard for the purchaser. In the past, a protracted fall in the price level has always been accompanied by a reduction in the general level of interest rates. It is during such periods that the holder of a bond purchased at the beginning of the cycle stands to gain the most. His gain is twofold: not only does the purchasing power of the money he receives under his contract increase, but the yield on his original investment continues to become increasingly favorable compared with the possible yield on current commitments. The corporation, however, realizing its position in such a turn of affairs, often reserves the right to pay off the issue at a slight premium and thus to terminate a contract which threatens to become less

and less favorable under such conditions. This, however, prevents the purchaser or the investor from profiting during the period when conditions are in his favor.

On the other hand, one rarely finds any provision that enables the investor to terminate his part of the contract when conditions are reversed. Periods of rising prices and rising interest rates generally occur simultaneously. During such a period the holder of bonds, purchased at the beginning of the movement, suffers. His dollar contract becomes less and less favorable and he is committed to a low yield at a time when opportunities are available for more profitable investment. The presence of a convertible feature, whereby the bondholder is given the right to convert into the common stock of the company, would be especially favorable at such times, but this type of contract is rarely found among bonds.⁶ In practice, therefore, it often happens that the purchaser of bonds accepts a position whereby he is always compelled to suffer from changes in the price level and with no opportunity for profit. Exercise of the call privilege by the corporation prevents the bondholder from gaining when the cycle of interest rates and prices is moving in his favor and no corresponding rights are given the bondholder to terminate his contract when the cycle moves against him.⁷

Prompt presentation of bond, when called, necessity for.—It is very important for the holder of callable bonds to present his bonds for payment at once after they have been called, as interest ceases to run on the bond after the date (usually the next interest date) when the corporation offers to redeem it. From that time on the corporation assumes no obligations to pay the coupons of such bonds, although it does recognize the obligation to pay the principal sum, even though the bond is presented long after the call date. It frequently happens that the inexperienced investor neglects to present his bonds for redemption, possibly failing to have observed the printed notice. He clips his next coupons as usual and presents them for payment only to have them returned unpaid.

⁶ See p. 196.

⁷ For full discussion of the economic aspects of the call and convertible features of bond contracts see Smith, Edgar L., "Speculation and Investment," *Atlantic Monthly*, October, 1925, p. 542 ff.

He has thus lost interest for the entire period between the two interest dates.⁸

Convertible bonds.—Convertible bonds are issued with a somewhat different purpose in mind than are callable bonds. Here the aim is to give the bondholder all the security that goes with a bond, together with the possibility of participating in the future success of the company. Thus, the holder of a convertible bond is given the option of converting his bond into the stock of the corporation at a specified ratio and after some stated time.

The economic significance of the convertible feature is important. As a practical matter it is designed primarily to give the bondholder the privilege of sharing in the ultimate prosperity of the company, while according him the protection arising from a contractual obligation in the early stages of the company's growth. In theory, however, the call feature acts as a hedge against unfavorable changes in the price level. Under normal conditions a rise in prices adversely affects bondholders and is favorable to business corporations. If the bonds of a corporation may be converted into its common stock on terms that are not too onerous, it is apparent that the bondholder may escape the adverse effects of rising prices by converting his fixed income obligations into stock which shares in the corporation's assets and earning power. The effect here is quite the reverse of that caused by the introduction of the call feature, which is usually in favor of the corporation and against the bondholder. It is unfortunate for the investor that the convertible feature is so uncommon and that those corporations which issue convertible bonds do so largely because of necessity. Either their credit position is not sufficiently favorable to permit them to borrow on favorable terms without the inclusion of special features in the bond contract, or else their capital structure is so arranged that any new securities put out must accept a subordinate position in relation to assets and earnings and hence require such special features to stimulate their sale. Rarely does it become necessary for strong corporations to offer the conversion privilege, in order to dispose of their bonds on favorable terms, except during periods of extreme financial stress.

⁸ It is customary practice for up-to-date bond houses to keep a record of the holdings of their clients and to notify them in case any of their bonds are called.

The conversion contract.—The contract in which the conversion privilege is set forth gives in considerable detail the conditions under which conversion may be made. Among the more important points covered in this connection are the manner in which the bonds to be converted should be surrendered, the times at which conversion may be made, the limits, if any, to the period during which the privilege may be exercised, the securities into which conversion may be made (bonds are generally convertible into either preferred or common stock), and the ratio of exchange, that is, the number of shares of stock which may be obtained for a given amount of par value of bonds. It is perhaps more simple to think of the conversion ratio as the price paid for the stock in terms of bonds, always considering the bonds to be worth par. Should the bonds be convertible into the common stock of the company at 80, this would mean that \$1,000 par value of bonds would purchase the same number of shares of stock as \$1,000 would if the market price of the stock was 80; that is, $1,000 \div 80$, or $12\frac{1}{2}$ shares of stock. If the stock had been convertible at 150, then the number of shares of stock which a \$1,000 bond would bring would be only $1,000 \div 150$, or $6\frac{2}{3}$. It is apparent that the price at which the stock into which the bond is convertible is selling on the market will determine how profitable the contract is at any particular time. This matter is explained in more detail below.

Bonds, into what convertible.—In most instances the security into which the bond may be converted is either the common or the preferred stock of the company. It is apparent, however, that the right to convert into preferred stock carries limited benefits only to the bondholder, unless the preferred stock is participating, for ordinary preferred stock is closely akin to bonds, in that the return is limited to a stated dividend rate. The conversion privilege thus accords the bondholder in such cases the right to receive a somewhat higher current income, but derived from a security with considerably more risk than ordinarily exists in the case of bonds. When the conversion privilege extends to common stock, on the other hand, the bondholder is invited to participate without limit in the future prosperity of the company.

Simple type of convertible bond, N. Y., N. H. & H., Convertible 6's, 1948.—There are abundant examples of convert-

ible issues available for illustrative purposes.⁹ We will, however, confine our present selections to a few representative issues which emphasize the more important aspects of convertibility. New York, New Haven & Hartford 6 per cent debentures illustrate the simplest type of convertible bond. These bonds may be converted at any time when the books of the company are not closed for transfer, after January 15, 1923, and before January 15, 1948 (date of maturity), into common stock at the rate of \$100 par value of bonds for a share of stock. As these bonds are noncallable, the holder of a \$1,000 bond in 1926 has a "call" on the company's stock, so to speak, for the remaining life of the bond on a par for par basis.

Anaconda Copper, Convertible 7's: varying ratios.—In other cases the conversion ratio varies either in relation to the number of bonds offered for conversion or as the bond approaches maturity. The conversion privilege attaching to Anaconda Copper Convertible Gold 7's gives the bondholders the right to convert at any time prior to February 1, 1933, on the following basis: the first \$10,000,000 of debentures presented for conversion may be converted at \$53 a share;¹⁰ the next \$10,000,000, at a price of \$56 per share; the next \$10,000,000, at \$59 a share; the next \$10,000,000, at \$62 a share; and the last \$10,000,000, at \$65 a share. Provision is further made, in this case, for an adjustment of these conversion prices in the event of stock dividends or any change in the par value of the stock.

Conversion, when profitable.—It has probably already occurred to the reader that the conversion privilege has a value only when the stock into which conversion may be made sells at a certain price in relation to the value of the bonds. A better understanding of the real value of the conversion privilege may be had if one will first consider that the bonds

⁹ The reader will find an extremely convenient list of all the more important convertible issues of this country in Poor's "Feature Volume." This was first issued in 1925 and in all probability will be reissued annually. This list contains not only the names of all issues, but also, for each issue, the date when the privilege lapses and the conversion basis.

¹⁰ This means that \$53 par value of bonds is required to get one share of stock, par 50. A \$1,000 bond may thus be converted into 18.868 shares of stock. It is apparent that conversion will become profitable only after the stock approaches or exceeds \$53 a share.

of a corporation generally have an investment value quite independent of the conversion privilege. New York, New Haven & Hartford Convertible 6's, for example, are selling at present, November, 1927, around 112 and the stock around 51. Since the conversion ratio is par for par, the conversion privilege may be said to have no present value. Should the stock advance to 130, on the other hand, it is apparent that the bonds would likewise have to advance to that point. Otherwise traders would purchase the bonds, convert them into stock, and sell the stock, thus making a profit known as arbitrage. Under such conditions, that is, where the value of the stock is so high as to raise the value of the bonds above their normal investment value, it may be said that a profit has resulted from the conversion privilege. In the case of Anaconda 7's we find current prices around November, 1927, to have been about 108, whereas the stock sold at that time at about 45.¹¹ Conversion under such conditions would obviously have been inadvisable, for a \$1,000 bond had an actual market value, based on its investment worth, of \$1,080. According to the terms of the contract, however, the first \$10,000,000 of bonds may be converted at 53 which means that only 18.868 shares of stock may be had for a \$1,000 bond. At 45 this stock would be worth \$849.06, as compared to \$1,080 for the bond. Should the stock advance to 57¼, on the other hand, conversion would be profitable by a very slight margin. Owing to the peculiar conditions under which conversion is permitted, it is conceivable that some conversion would take place even before the stock reached the actual conversion point, for many bondholders would be anxious to participate in the low conversion rates available to the first \$10,000,000 of bonds offered for conversion.¹²

¹¹ These prices represent the approximate price at or about November 1, 1927. They are taken merely for illustrative purposes and therefore serve our needs even though they will undoubtedly fluctuate widely from these levels during the next several years.

¹² The student may be interested in this connection in reviewing the recent Dodge financing. (See *Commercial and Financial Chronicle*, Vol. 120, p. 1885.) The 15-year convertible debentures issued at the time the company was re-financed in 1925 were offered originally at 99 and interest. The convertible features of this issue may be summarized as follows: "Debentures to a total face value of \$30,000,000 (total issue \$75,000,000) will be convertible, at the option of the holder, into common stock, class 'A.'" In making conversion, debentures

Change of conversion ratio, as maturity approaches:
Chesapeake & Ohio Convertible 5's.—Another type of conversion privilege was found in the case of Chesapeake & Ohio Ry. Convertible 30 Year Secured 5's, due in 1946. These bonds were convertible into common stock at 75 until April 1, 1920, at 80 from 1920 to 1923, at 90 from 1923 to 1926, and at par from April 1, 1926, to April 1, 1936. On February 19, 1925, the stock averaged to sell at 118 $\frac{3}{8}$. It is at once apparent that the conversion feature had already operated to raise the value of the bonds over their normal, or yield, value.¹³ In fact, one would expect the bonds at that time to have sold at 131.53 (that is, $\frac{118.375}{90}$). They actually sold at 131.25. The difference between actual price, and conversion or computed price, is negligible, and may be explained in part by the necessity for taking average prices for the day as compared to the actual price at a given instant. Furthermore, the time element and the question of a selling or a buying commission will at all times permit a slight spread between the actual and the theoretical price of convertible bonds.

Where the conversion ratio changes as the bond nears maturity, the value of the privilege to the bondholder de-

shall be valued at face value, and stock at \$30 per share until a total of \$5,000,000 debentures shall have been converted. The conversion value per share of stock for each succeeding \$5,000,000, debentures converted thereafter shall be as follows: \$35, \$40, \$50, \$60, and \$70, respectively. The holder of debentures would make a profit should the stock cross \$30. In order to benefit by the low conversion price of 30, however, the bondholder would have to be among the first to convert, as only \$5,000,000 of debentures were convertible at \$30. On September 12 it was announced that the first \$5,000,000 debentures had been presented for conversion. (*Chronicle*, Vol. 121, p. 1351.) Up to this time the stock had sold as high as 31, although averaging to sell somewhat under 30. By October 10 it appears that \$10,000,000 more debentures had been converted. (*Chronicle*, Vol. 121, p. 1794), the last \$5,000,000 of which were converted at 40. The highest price at which the stock had sold up to this time was 40 $\frac{1}{4}$. It is apparent that the desire to be included in the "next" \$5,000,000 group would at any time urge the bondholder to convert somewhat before the stock actually sold at the conversion point, although not if it were selling substantially below it. Such conversion operations anticipate a subsequent appreciation in the price of the stock to a point above the conversion price. The preceding discussion assumes that the bonds did not fluctuate very far from 100. The price range for the entire period the bonds were outstanding, from time of issue to October 10, was 94 and 100.

¹³ At this time high grade railroad bonds were selling to yield about 5 per cent. Thus, without the conversion feature, these bonds would not, in such a market, sell at a price very far from par.

creases somewhat. This may be illustrated if we assume that the stock just referred to sold at a price no higher than 90 prior to April 1, 1926, and advanced to 100 thereafter. The change in conversion ratio on April 1, 1926, would have prevented such profit as might have accrued from a subsequent advance in price above 90 (assuming, of course, that the bonds were to sell approximately at par on the basis of their yield). In any event, such holders as failed to convert or to sell their bonds before April 1, 1926, suffered a distinct loss through their negligence. In general, therefore, if the price ratio is automatically raised as the bonds approach maturity, it means that the market price of the stock must increase at a more rapid rate, in order to make conversion profitable, than would be the case if the ratio of conversion was not raised throughout the life of the bond.

Conversion with callable feature.—The presence of a callable clause in a convertible bond likewise lessens its value. In the case of the Chesapeake & Ohio bonds just referred to, for example, there was a clause giving the company the right to call the issue as a whole at 105, on or before April 1, 1929, and thereafter at par, upon 60 days' notice. It is true that the company, in the event of exercising the call privilege, was required to give the holder 60 days' notice, thus allowing him time in which to convert if he so desired. While this situation afforded the bondholder some protection, it did not, on the other hand, prevent the company from taking away the conversion privilege entirely by calling the issue at 105 and accrued interest on October 1, 1926, thus taking away further benefits which might accrue from a subsequent rise in the price of the stock.

Bonds with detachable purchase warrants.—Another method by which the bondholder may be given a "call" on the stock of a company and thereby be allowed to participate in its future growth is by means of purchase warrants attached to the bond. Thus the original purchaser of a \$1,000, Sinking Fund Gold 8 per cent bond of the Pathé Exchange, Inc., in 1921 received also a detachable warrant entitling the holder to purchase at any time before the close of business September 1, 1931, 40 shares of class "A" common stock at \$25 per share. This right had no value at the time the bonds were put out, since the stock was then selling below \$25 per share.

The writer recalls the expression of surprise that came over the face of an elderly lady who came to his office one day in August, 1925, and, upon inquiring whether a certain piece of paper which she handed to him had any value, learned its real value. Upon examination the document proved to be a detachable warrant entitling the holder to purchase 40 shares of class "A" stock of Pathé, Inc., at \$25 a share. The market quotation for the stock at that time was \$80 per share. Her warrant was worth approximately \$2,200.

The value of purchase warrants depends, therefore, on the future prospects for an advance in the value of the stock of the issuing company. A corporation generally issues such bonds only when its credit is not especially high. At such times additional attractions must be given to prospective investors, if they are to be induced to purchase the bonds of the company at a price at all satisfactory to the issuing corporation. The speculative value attaching to the warrants is used as a means of "sweetening" an otherwise risky investment, for, if, and when, the stock advances to a point above the price at which new stock can be purchased from the company, then the detachable warrant has a value. The holder of the bond may obtain this profit either by buying shares of stock from the company, or else by selling his warrant (which is usually transferable) on the market.

Stabilized bonds.—Our discussion of special types of bonds would be incomplete if we failed to devote some attention to an innovation in bond financing known as the stabilized bond. The first important use of this type of bond was made in 1925 by the Rand Kardex Company.¹⁴ The attention which we devote to this type of bond is warranted, not so much because of its relative importance among corporate issues, as on account of the novel ideas incorporated therein. In our discussion of this bond, therefore, we will attempt to reiterate some of the more important influences which affect the position of bondholders as a class. We refer

¹⁴ This bond is fully described in an article appearing in the *Annalist*, November 13, 1925, written by Prof. Irving Fisher of Yale University. Prof. Fisher is a strong advocate of a stabilized dollar. See Fisher, Irving, "Stabilizing the Dollar," 1920, Macmillan Co., New York; and "Our Unstable Dollar and the So-Called Business Cycle," *Journal of the American Statistical Association*, June, 1925, p. 179 ff.

here to those influences which result from changes in the price level and which affect the bondholder quite independent of the changes in the financial position of any given company.

The student in economics is familiar with the wide fluctuations which have occurred in the purchasing power of the dollar from 1865 to 1925. If we start with a 1913 dollar as worth 100 cents, an examination of commodity prices in 1865 as compared to 1913 would prove to our satisfaction that our dollar was then worth but 40 cents. In 1896, however, it would have been worth 150 cents, whereas in 1920 it would have again declined to the point where it was worth only about 40 cents. To-day we find that it is worth around 63 cents. It will be observed that we have measured the value of the 1913 dollar in terms of purchasing power; for, after all, that is what most people are interested in. The bondholder, as we see, is paid in dollars, which, from year to year, vary widely in purchasing power. The essential aim of the stabilized bond is to eliminate the risks arising from this situation.

Rand Kardex Stabilized 7's.—No better description of the manner in which the Rand Kardex Company expected to eliminate investment losses resulting from fluctuations in price levels can be given than that appearing in the bond contract under which these bonds were issued. Here we find the following pertinent agreements made with the purchaser of the bond:

The Rand Kardex Company, for value received, hereby promises to pay the registered holder hereof on the first day of July, 1955 (place of payment), such sum of money as shall possess the present purchasing power of one thousand dollars (\$1,000) with interest thereon at the rate of 7 per cent per annum, payable quarterly (dates), in such sums as shall, at the respective times of payment, equal in purchasing power one and seventy-five one hundredths per cent (1.75%) of said purchasing power of one thousand dollars (\$1,000), all to be based upon an index number of the prices of commodities defined and fixed in accordance with the amplified statement below. . . .

The index number of the prices and commodities employed hereunder shall be the well-known index number of wholesale prices of the United States Bureau of Labor Statistics as published each month, subject to such modifications, amplifications, and changes of method in making and computing the same as shall, or may, be made by said bureau from time to time.

If as of any date, the index number of the prices of commodities shall remain at approximately the present level, that is to say, if it does not rise or fall as much as one-tenth part of the level fixed as of July 1, 1925, i.e., 157.5, then the amount to be paid as principal shall be one thousand dollars (\$1,000); and the amount to be paid as interest on any quarterly interest date shall be seventeen dollars and fifty cents (\$17.50).

In case the index number as of any due date shall be found to be more or less than that fixed for July 1, 1925, by as much as one-tenth part of said index number of July 1, 1925, then, for every full one-tenth rise or fall of said index number, there shall be added or subtracted, respectively, one-tenth of the payment then due, said one-tenth being \$1.75 for any quarterly payment of interest and \$100 for the principal sum.

The preceding description does not cover the entire bond contract, but reproduces those parts which have an essential bearing on the methods to be employed in computing the amount of interest due at any interest date and the amount of principal due at maturity. Undoubtedly this type of bond has many advantages, but it is doubtful that it will play an important part in American finance in the immediate future. The uncertainty as to what the fixed obligations of the issuing company will be in any year, and especially the uncertainty as to what principal payment it will have to make at maturity, will probably deter corporations from issuing such bonds. And, so far as the investing public is concerned, it is difficult to overcome the psychological fact that a dollar is a dollar, regardless of what it will purchase. The average investor, whatever the economics of the situation are, is quite apt to look upon a reduction of, say, 50 per cent in current interest and principal, even though measured in terms of dollars that have appreciated in value, as a distinct loss. Therefore, any large sale for such bonds in the American market is doubtful.

Summary.—Our purpose in this chapter has been to cover certain special classes of bonds, or special aspects of typical bond contracts that deserve more consideration than could be given in the preceding chapters. The call feature, or right to redeem, usually works to the advantage of the issuing corporation and to the disadvantage of the purchaser, although in some instances the premium which the corporation is required to pay results in a profit to the purchaser. The conversion

feature, on the other hand, is designed to let the bondholder participate in the future success of the company in cases when this comes. While generally offered through some form of conversion rights, the use of detachable warrants carrying the right to purchase the stock of a company at a specified price is becoming more common. The stabilized bond is a unique experiment in American finance and is designed to eliminate the risk which investors now incur through fluctuations in the purchasing power of the dollar. The future of this type of bond is at present uncertain, although it focuses attention on a real problem that confronts every investor.

CHAPTER X

PREFERRED STOCKS

Development of preferred stocks.—The fundamental distinction between bonds and stocks is clear: the former are contractual obligations to pay a certain sum of money and interest at a definite rate and at the times set forth in the contract. Stocks, on the other hand, evidence ownership rights to participate in the earnings and management of the corporation. Simple as this distinction appears, the evolutionary process which has gone on in corporation finance has resulted in the emergence of securities which are more or less intermediate between purely contractual obligations, on the one hand, and outright evidences of ownership on the other. The income bond, it will be recalled, can hardly be designated a full contractual obligation, for the payment of interest is generally contingent on the earnings which the corporation can produce. Preferred stocks are on the other side of our dividing line, yet they are not, strictly speaking, ownership securities. In the main, their rights to participate in the earnings of the company are quite definitely limited and not infrequently their right to vote at stockholders' meetings is denied or limited.

There are various reasons for the existence of preferred stocks in American finance. In the first place, there is always a strong motive for the issuance of such securities when a financial reorganization becomes necessary. At such times it becomes essential to reduce fixed charges, and this is often done by requiring the junior bondholders to accept preferred stock in lieu of their bonds. In this way fixed charges are converted into contingent charges, yet the former bondholders are given a prior claim on earnings.¹ But the development

¹ A study of almost any of the important railroad reorganizations will illustrate this tendency. See Daggett, Stuart, "Railroad Reorganization," and also Ripley, W. Z., "Railroads, Finance and Organization," 1915, Longmans, Green & Co.

of preferred stock issues is by no means confined to reorganization finance. At the time of the great industrial consolidations which occurred in this country between 1900 and 1910, it was customary to issue bonds and preferred stock up to the value of the physical property and to issue common stock on the basis of anticipated earning power.

Preferred stocks a convenient method of corporate financing.—During recent years there has been a steady output of preferred stocks in connection with public utility financing, although preferred stocks have been issued on a large scale by industrial concerns as well. Some idea of the more recent tendencies in this respect may be had from the table on page 208.

There are two reasons for the growing popularity of this type of financing. Let us consider the situation first from the corporate standpoint. It is quite natural for the present owners of a corporation, the common stockholders, to seek means of expansion that do not involve a thinning of their present equity. This may be accomplished by the issuance of bonds, to be sure; but this procedure results in burdening the corporation with fixed charges which may, sooner or later, jeopardize the common stock equity. The issuance of preferred stock, on the other hand, accomplishes everything that a bond issue will accomplish, yet creates a contingent, not a fixed, charge against the corporate earnings. Additional funds are secured and the return promised to the investor is strictly limited, yet, if the dividend obligations are not met, the stockholders can take no action against the corporation. It is true that many corporations which secure additional funds by means of bond issues or preferred stock issues might have sold more common stock and thus secured the necessary capital without incurring either a fixed or a contingent claim against the corporate earnings. In many cases this is good corporate policy, especially where the business risks of the company are high. On the other hand, where earnings do not fluctuate widely, and where business risk is low, as is the case with utilities and railroads, it is to the advantage of the present stockholders to finance by means of fixed interest bearing obligations, so long as the rate of earnings on new capital exceeds that promised on the capital borrowed. If a corporation with a present capital structure, consisting of \$1,000,000 of capital stock and \$1,000,000 of 6 per cent bonds, is able to earn on

ANALYSIS OF CORPORATE FINANCING BY CLASSES OF ISSUES—U. S.

	1921	1922	1923	1924
Long Term Bonds.....	\$1,781,262,500 (81%)	\$2,194,982,150 (74%)	\$2,262,462,000 (71%)	\$2,319,460,500 (66%)
Short Term Bonds.....	213,241,366 (10%)	133,757,500 (5%)	180,487,500 (6%)	335,678,800 (10%)
Preferred Stock.....	74,928,100 (4%)	332,788,350 (11%)	406,718,136 (13%)	346,054,922 (10%)
Common Stock.....	106,115,000 (5%)	287,730,447 (10%)	329,240,861 (10%)	519,600,842 (14%)
Long Term Bonds.....				
Short Term Bonds.....				
Preferred Stock.....				
Common Stock.....				
	1925	1926	1927	
Long Term Bonds.....	\$2,667,256,300 (63%)	\$3,059,052,500 (67%)	\$4,465,723,700 (69%)	
Short Term Bonds.....	307,986,250 (7%)	294,482,695 (6%)	305,498,500 (5%)	
Preferred Stock.....	636,811,752 (15%)	543,579,500 (12%)	1,048,285,202 (16%)	
Common Stock.....	609,583,889 (15%)	676,561,985 (15%)	675,474,549 (10%)	

its invested capital at the rate of 10 per cent, it is obvious that the common stockholder gets a return of 14 per cent. If the total investment of \$2,000,000 earns 10 per cent, then the total return is \$200,000. After 6 per cent is deducted as bond interest, there remains \$140,000 for the stock, or \$14 per share, par value \$100. If the directors of the corporation are confident that another million of capital invested will be able to earn at the current rate of 10 per cent, an additional earning capacity of \$4 per share will be forthcoming for the common stock, if this capital can be secured by issuing more 6 per cent bonds, or \$3 per share, if 7 per cent preferred stock is sold. In any event "per share" earnings cannot be increased by selling more common stock at par, for the amount of stock increases as rapidly as earnings.

The advantage of issuing preferred stock lies in the fact that the company does not assume a fixed obligation. The disadvantage, from the corporation's standpoint, comes from the somewhat higher return that must be paid on preferred stock as compared with a bond issue. Preferred stocks, as a group, have higher investment risks than bonds. This is but natural, in view of the lack of a contractual promise to pay either interest or principal, and also of the fact that preferred stocks are frequently preceded by bonds or notes, and are always preceded by current liabilities. Furthermore, preferred stocks, although they may be accompanied by sinking fund provisions, are never issued with a definite maturity date. It would be contrary to the very nature of stock to issue it in such form. Should the investor who buys preferred stocks desire eventually to get back the principal sum he invests he must rely either on disposing of his security to some other purchaser, or of having his stock called. Lacking, as it does, a definite contractual promise of the corporation to pay either dividends or principal, preferred stock occupies a position, in the event of default, even less desirable than that of the unsecured creditors of the corporation. Preferred stockholders have no contractual claim against the corporation. Their equities, as well as those of the common holder, must be used without limit to satisfy the creditors, and only what is left after complete satisfaction of all prior claims can be considered the property of the preferred holder. There are occasions where the bondholders and other creditors seek addi-

tional cash for the reorganized corporation. Rather than supply this themselves they frequently make concessions to the preferred and common stockholders, provided they will supply such funds. It cannot be said, however, that such concessions add particularly to the position of preferred stock in times of financial stress.

Preferred stocks, appeal of, because of yield.—So much for the motives which urge the corporation to issue preferred stock when in need of funds. Since it is impossible for the corporation, either directly or through investment bankers, to float securities that are not in public demand, a complete explanation of the growth of this type of security requires an analysis of the public's attitude toward preferred stocks. As already stated, preferred stock issues promise a greater current return than bonds. At *first glance* they seem to offer the prerequisites of a safe investment—security and regularity of income and safety of principal. They also offer comparative freedom from care. While not as safe as bonds, they appeal to a large group of investors who seek a somewhat higher return than bonds offer.² It is this differential which has played so important a part in stimulating the sale of preferred stocks during the past dozen years, especially from 1917 on. The rapid rise in prices after that year reacted most unfavorably on the so-called "fixed income" receiver; the person, for example, who was dependent on the income from invested

² The average differential in yield between high grade industrial bonds and preferred stocks from 1910 to 1925 is shown in the following table:

AVERAGE YIELD ON HIGH GRADE INDUSTRIAL BONDS AND
PREFERRED STOCKS

(From *Annual Statistical Bulletin*, 1926, Standard Statistics Co.)

—AVERAGE YIELD—				—AVERAGE YIELD—			
Year	Ind. Bonds	Pref. Stocks	Differ- ential	Year	Ind. Bonds	Pref. Stocks	Differ- ential
1910	4.83	6.30	1.47	1918	5.45	6.70	1.25
1911	4.78	6.28	1.50	1919	5.40	6.31	.91
1912	4.81	6.27	1.46	1920	6.01	6.79	.78
1913	4.99	6.56	1.57	1921	5.96	6.80	.84
1914	4.93	6.49	1.56	1922	5.21	6.14	.93
1915	4.97	6.48	1.51	1923	5.26	6.12	.86
1916	4.89	6.19	1.30	1924	5.21	6.08	.87
1917	5.09	6.42	1.33	1925	5.06	5.90	.84

funds. As prices and living costs mounted rapidly a real problem was created for many persons who formerly lived comfortably on the income from their invested funds. In such cases, it was generally impossible to increase the principal sum, so the only remaining solution was to increase the income from such funds. A partial solution lay in the shift of investments from bonds to preferred stocks. The extent to which this actually occurred cannot be measured statistically. This movement, however, has been generally recognized by investment banking houses, and direct evidence of the increasing popularity of preferred stocks during this period is found in the table in note 2, on page 210. Referring to this table one notes a decided narrowing of the margin between the yield on preferred stocks and bonds after 1918. The margin of differential dropped from a fairly constant level of about 1.5 per cent to 1.30 per cent in 1916, 1.33 per cent in 1917, and 1.25 per cent in 1918. The margin again dropped in 1919 to less than 1 per cent and remained below this point until 1925.³

Preferred stockholder and changes in price level.—It is a question whether this shift has proved, on the whole, a profitable one. A slight increase in yield has been gained, to be sure. Yet this does not answer the question fully. If the investment risk, measured by actual principal and dividend losses over a wide group of preferred stocks, is less than that indicated by the additional yield, then the shift has been at least partially profitable.⁴ Yet preferred stocks, unless participating, are subject to the same influences that make bonds a poor medium of investment during periods of rising prices. They are fixed income bearing obligations and, except for a very slight improvement in their credit status at such times, they fail to appreciate with rising prices in the same way that common stocks do. It is no hedge for the investor to diversify between bonds and preferred stocks, with the idea of protecting himself against changes in the price level. The division must be made between bonds or preferred stocks, on the one hand, and common stocks, on the other.

Preferred stock contract.—Preferred stocks, unlike bonds, require no indenture. The authority under which the corpora-

³ Recent data on the amounts of various classes of securities floated in this country from 1921 to 1927 are shown in the table on p. 208.

⁴ For further discussion of this point see p. 229.

tion issues preferred stock is found either in the original or the amended corporate charter. Here also are found all the various agreements which the corporation makes with the preferred holders. The following extract, taken from the Amended Charter of the Spicer Manufacturing Company, illustrates the manner in which this agreement is ordinarily set forth.

DESCRIPTION OF PREFERRED STOCK

The charter of the corporation, as amended, provides, among other things, substantially as follows:

(a) The preferred stock shall be entitled to 8% cumulative dividends, payable quarterly on the first days of January, April, July, and October of each year, and shall be redeemable in whole or in part at any time after three years from the issue thereof on any dividend payment date on not less than 30 days' notice at 110 and accumulated and unpaid dividends thereon.

(b) Except as otherwise required by the Statutes of the State of Virginia the holder of the preferred stock shall have no voting power unless and until default shall be made in the payment of two quarterly dividends thereon and thereafter until such default and all defaults subsequent thereto shall have been made good, the entire voting power shall be vested in the holders of the preferred stock. Otherwise, the entire voting power shall be vested exclusively in the holders of the common stock.

(c) Preferred stock in excess of \$3,000,000 par value will not be issued unless the net earnings applicable to dividends for 12 out of the 14 months immediately preceding shall be at least equivalent to $2\frac{1}{2}$ times the dividends on the outstanding preferred stock, plus the amount of preferred stock to be issued.

(d) Preferred stock shall not be issued for property unless the par value of the stock does not exceed 80% of the appraised value of the net tangible assets to be acquired.

(e) No mortgage shall be placed on the properties of the corporation or of the subsidiary or affiliated company, or any preferred stock issued on a parity with, or having preference over, the preferred stock if the holders of one-third of the issued and outstanding preferred stock object at a meeting called and held for the purpose.

(f) On or before the first of January, 1921, a sinking fund is to be established and maintained for the purchase of the preferred stock; payments to which sinking fund for the first five years shall be at least equivalent in each year to 3% of the largest amount of preferred stock

outstanding, and thereafter at least equivalent to 5% of the largest amount of preferred stock outstanding.

(g) The preferred stock to be preferred as to assets on liquidation or dissolution to the extent of 100% of its par value, together with accumulated and unpaid dividends thereon; if such liquidation or dissolution be voluntary, however, the holders of the preferred stock shall be entitled to receive a further amount equal to 10% of its par value.

(h) No dividends shall be paid on the common stock until after payment, or provision made for payment, of preferred stock dividend, and unless quick assets less all debts maturing one year or less equal the amount of the preferred stock outstanding.

While there is a wide variation in the contract provisions surrounding the preferred stocks of different corporations, one must constantly bear in mind the difference between the preferred stock contract and the bond contract in which the corporation agrees specifically to perform certain acts, failure to perform which gives the bondholders recourse against the corporation.

Bonds versus Preferred Stock.—Preferred stock cannot be raised to the status of bonds. It is this fundamental difference between credit and ownership instruments of a corporation which makes it necessary to draw a sharp distinction between bonds, on the one hand, and stocks, on the other, whether the latter be prior preferred, preferred, or common. Despite the fact that corporations, independently, or on the advice of the investment bankers who sell their issues, have frequently attempted to raise the investment status of their preferred stocks by entering into elaborate contracts with the preferred holder, specifying exactly what preferences he should have, and limiting the common stockholder in respect to the exercise of some of his rights, especially those pertaining to the payment of dividends until the preferred holder's financial position is secured, the fundamental nature of preferred stocks nevertheless remains the same. Such securities are not based on a definite contract whereby the corporation agrees to pay dividends, nor is there any specified maturity date at which time the original investment or principal sum is paid back to the stockholder.⁵ The preferred holder is, in fact, a part

⁵ This is not strictly true. A limited number of preferred stock issues contain agreements under which the corporation sets aside sinking funds for redeeming the preferred stock within a specified period.

owner in the enterprise, and if he fails to receive dividends, or if any other aspect of the contract cannot be lived up to, he has no recourse.

Types of preferred stock.—Having established the fundamental distinction between bonds and stocks, whether the latter be preferred or common, we may now proceed to examine more closely the nature of preferred stocks in contrast to common stocks, as well as the more important types of preferred stocks commonly found in the securities markets. This last question will require us to examine in some detail the nature of the preferred stock contract in selected cases.

In a legal sense there is no difference between preferred and common stocks, in that both represent evidences of ownership in a corporation. It thus occurs that, in any suit brought by a preferred stockholder in which he attempts to press his rights or preferences over the common stockholder, he must furnish evidence of the special rights which he claims; otherwise no distinction will be recognized.⁶

Noncumulative preferred stock.—The simplest, and perhaps the earliest, type of preferred stock is one which gives the holder thereof preference up to a specified amount, in respect to such dividends as the directors of the corporation may declare in any given year. No specific mention is made that, in case the dividend is not paid in any year, it shall become cumulative, that is, that it must eventually be paid before the common stockholder may receive a dividend. Nor are any restrictions set up as to how the business shall be run. Such stock may be voting or nonvoting.

The advantage of this type of security over common stock lies in the supposed regularity of dividends resulting from the prior claim which the holders are given to earnings as contrasted with the claims of the common holder. The disadvantages attaching to this kind of preferred stock come from the fact that such stock may not participate in the earnings of the corporation above the specified dividend rate. Thus, in

⁶ *Roger v. New York, etc., Land Co.*, 1892, 134 N. Y. 197. "The agreement (the right of the preferred stock) is ascertained from the contract, reports, resolutions, conveyances, etc." *Hacket v. Northern, etc., Railway*, (1905) 140 Fed. 717. "In a suit by a preferred holder, he must allege the character of his preference."

cases where the company becomes highly successful, the preferred stockholder continues to receive his old rate of dividends and enjoys only the relatively small advantage of having the investment rating of his stock raised somewhat. The real gains all go to the common stockholder. Furthermore, this very financial success may be the result of sacrifices which the preferred holder has been compelled to make. For instance, the mere fact that the preferred dividend is earned in any year is no reason why it must be paid. It is conceivable that the directors may elect not to declare any dividends in a given year, or for several years, even though earnings are shown on the books of the corporation.⁷ In this way the property account and surplus of a company may be substantially increased at the expense of the preferred holder, who fails to receive any dividends during this period of growth. The result of this is an increase in the value of the common stock investment without a corresponding gain to the preferred holder.

Case of Southern Railway preferred.—This is exactly what has recently happened in the case of the Southern Railway Company. The preferred stock of this company is noncumulative and has had, until recently, a checkered experience in respect to dividends. The directors of the company declared varying dividends on the stock up to 1923, frequently declaring less than was actually earned. In fact, during certain years prior to this time, no dividends were paid at all, although net earnings were in excess of the entire preferred dividend requirements. The directors used surplus earnings that might have been declared as preferred dividends in building up the road's properties, until, in 1923, the earnings of the road were ample to pay dividends on both preferred and common stocks.⁸

⁷ It is true that even minority stockholders may compel the payment of dividends in a case where earnings are very large and where the payment of dividends clearly will not jeopardize the cash position of the company. A court of equity, while not willing to substitute its judgment for that of the directors, will not permit a minority interest, or preferred stockholders who may constitute a minority interest, to suffer from fraudulent action on the part of a board of directors. This protection is of little value, however, for it is extremely difficult to prove fraud and the courts consistently refuse to substitute their judgment for that of the directors in matters pertaining to the declaration of dividends.

⁸ The following table presents the earnings of the Southern Railway Com-

Since 1923 the full preferred dividend has been paid as well as liberal dividends on the common stock. The holders of the preferred stock in 1924 brought suit against the company, claiming some \$29,000,000 of back dividends which had been earned but not paid. The Court held, however, that "the contract here does not give preferred stockholders a fixed dividend chargeable upon the profits of each and every year, irrespective of a declaration of dividends by the board, and hence does not create in favor of the preferred stockholder an obligation upon the company which places the company under a continuing liability to him for a percentage of earnings made and not paid in any one year. This is the effect here of the phrase 'noncumulative' as determined by other provisions accompanying its use and by language serving to show what it should be taken to mean. . . . I am of the opinion upon the whole case that, when the directors of the Southern Railway failed to declare dividends for the benefit of the preferred stockholders in any year in which earnings were sufficient for that purpose and in bona fide exercise of their discretion allowed those earnings not declared as dividends to be used for general corporate purposes as they deemed best, such

pany available for dividends from 1912 to 1924, the preferred dividend requirements, the amount paid, and the amount that was earned and not paid.

DIVIDENDS AND EARNINGS—SOUTHERN RAILWAY CO.

	<i>Year</i>	<i>Net Earnings</i>	<i>Preferred Requirements</i>	<i>Preferred Dividends</i>	<i>Earned and Not Paid</i>
(Year ended Dec. 31)	1924	\$17,769,140	\$3,000,000	\$3,000,000	none
	1923	15,136,998	3,000,000	3,000,000	none
	1922	8,823,797	3,000,000	1,500,000	\$1,500,000
	1921	2,019,370	3,000,000	none	2,019,370
	1920	1,220,514	3,000,000	1,500,000	none
(Year ended June 30)	1919	5,360,587	3,000,000	3,000,000	none
	1918	4,795,852	3,000,000	3,000,000	none
	1917	13,917,205	3,000,000	1,500,000	1,500,000
	1916	11,324,664	3,000,000	none	3,000,000
	1915	9,245,703	3,000,000	none	3,000,000
	1914	1,523,396	3,000,000	none	1,523,396
	1913	4,747,777	3,000,000	2,700,000	300,000
	1912	7,029,965	3,000,000	3,000,000	none
	1911	6,718,128	3,000,000	2,700,000	300,000

It should also be borne in mind that the company had a sizable surplus on its books, so that the directors had no excuse for omitting dividends on the ground that the payment would result in capital impairment.

failure to declare a dividend settled the question as to the right of any class of stockholders to demand payment out of the then existing or future earnings of the railroad company for any such past dividend.”⁹

Legal distinction between noncumulative and cumulative stock clear.—The judge stated, in arriving at his decision, that the disposal of net earnings was a function of the board of directors, and that the decision of the board must be accepted unless proved oppressive or fraudulent. In this decision the accepted difference between cumulative and noncumulative preferred stock was maintained. In an effort, however, clearly to ascertain the accepted distinction, the judge sitting in the case not only examined closely the charter of the corporation but also studied authorities who wrote at the time the stock was originally issued in 1894. The conclusion, derived from a study of such authorities as Machen, Thompson, and Cook, was that the word “cumulative” means that dividends which might be paid out as earnings, but which are not so paid, shall be carried over from year to year, but, eventually, must be paid before dividends can be paid on the common stock. “Noncumulative” means that the right to the dividend is measured by the action of the board of directors in any one year and that the failure to declare the dividend in any one year prevents it from accumulating in subsequent years as a further charge on the current or subsequent earnings of the company. The charter of the corporation, in so far as it relates to the preferred stock contract, supports these conclusions.

The preferred stock is entitled to the following preferences and to no other, namely;

In each and every fiscal year after the first of July, 1895, to receive noncumulative dividends at and up to the rate of 5% per annum in preference and priority to the payment of any dividend on the common stock in such fiscal year, but only from the net profits of the company as such shall be fixed and determined by the board of directors, and only when and as such board shall declare dividends therefrom; but, notwithstanding the preference hereby declared, if after providing for the payment of dividends for any fiscal year on the preferred stock outstanding in such year, there shall remain a surplus of net profits of such

⁹ *Norwich Water Power Co. v. So. Ry. Crump. Rich., Va.*, June 27, 1925, quoted in *Commercial and Financial Chronicle*, Vol. 121, pp. 71, 72.

year, the board of directors may declare and pay dividends upon any other stock of the company for such year out of such surplus net profits.

Two other cases dealing with this same question were cited during the proceedings. The first was that of *Nickals v. N. Y., L. E. & W. R. R. Company*, 30 U. S. 363 (L. ed.), in which the decision was against the preferred stockholders. The other case cited was that of *Moran v. U. S. Cast Iron Pipe & Foundry Company*, (1923) 95 N. J. Eq. 389. The decision in the latter case, on the contrary, was favorable to the preferred stockholders. Here it was held that dividends on noncumulative preferred stock might constitute a claim upon earnings in subsequent years. The theory in this case was to the effect that when the corporation failed to declare dividends out of earnings in any year, but put such earnings back into the property, an obligation was created which must be discharged before "common" dividends could be paid. The conflict between the earlier cases and the New Jersey case, however, was apparently created by the existence of a New Jersey statute which permits a corporation to accumulate and set apart a surplus or reserve fund from earnings to meet dividends, whether cumulative or noncumulative. On the basis of this statute, the New Jersey courts lean to the theory that preferred stockholders have a claim on the corporation for the amount of the preferred dividend during years when the corporation earns the dividend.¹⁰

As a general proposition there are no strong grounds on which the preferred stockholder may reasonably expect to receive unpaid dividends on noncumulative preferred stock. This applies whether or not earnings are present during the years when no dividends are declared. Noncumulative preferred stock, therefore, constitutes a decidedly weak type of security. Dividends once passed are forever lost. Also, if passed when earned, the common stockholder benefits at the expense of the preferred holder.

Cumulative preferred stock.—A situation such as that existing in the case of the Southern Railway is unfortunate for the preferred stockholder. Contrasted with the moral duty

¹⁰ For a good short discussion of the principal points involved in these cases see *Harvard Business Review*, Vol. 4, pp. 495-500, "Legal Status of Noncumulative Preferred Stock." The preceding discussion is based in part on this article.

to declare noncumulative preferred dividends when earned is the strong temptation to overdo a reconstruction program at the expense of the preferred stockholder. In this way the properties may be so thoroughly rehabilitated that, when preferred dividends are declared, large dividends on the common stock become possible. It is apparent, therefore, that the presence of a cumulative feature in the preferred stock contract, which requires that such part of the specified preferred dividend as is not paid in any year shall cumulate and must be paid before any immediate or subsequent dividends may be paid on the common stock, adds distinctly to the position of the preferred stockholder. This is especially true, in that the existence of such a provision requires that unpaid dividends must cumulate whether earned or not in any year. In the case at hand such a provision would at least have made it necessary for the company to pay the equivalent of the full 5 per cent on the preferred stock for all back years before any dividends were paid on the common.¹¹

The case of Willys-Overland preferred.—The settlement which the holders of Willys-Overland preferred received in lieu of their accumulated dividends in December, 1925, will emphasize the relative positions of cumulative and noncumulative preferred stocks. In the case of the Willys Company dividends on its 7 per cent preferred stock were omitted during the years 1921 to 1924, inclusive, as well as during the first quarter of 1925. In fact, the company showed a heavy deficit for the years 1920, 1921, and 1922, although it showed earnings of \$13,034,032 available for preferred dividends in 1923, and \$2,086,646 in 1924, as contrasted to annual preferred dividend requirements of about \$1,500,000. The year 1925 proved prosperous for the company, however, earnings for that period approximating \$11,500,000. As a result the directors sought some means of liquidating accumulated dividends on the preferred stock, amounting to \$29.75 per share,

¹¹ Even this would not have given full protection, for, granting that accumulated dividends will eventually be paid, the preferred holder loses interest on them for every year they are held back. Thus, assume that a 7 per cent preferred stock has at the present time five years of accumulated dividends, amounting to a total par value of \$35 per share, but that this will not be paid for five years. The present value will then be approximately $35 \times \frac{1}{(1 + .07)^5}$, or \$24.92.

in order that dividends might be resumed on the common. With this in mind they authorized, in December, 1925, a dividend of \$29.75 on the 7 per cent cumulative preferred stock payable in common stock at \$25 per share. In as much as the common stock was then selling at about \$27 a share it is apparent that the preferred holder received the equivalent of \$32.13 in cash for every share of preferred stock held.¹²

Methods of liquidating cumulative dividends.—The method of liquidating accumulated preferred dividends just described is frequently used by corporations. It has advantages over a cash payment, in that the latter method frequently weakens the cash position of the corporation to such an extent that future dividends on either class of stock may be jeopardized. Where the back dividends are liquidated in stock, either preferred or common, it is frequently possible to resume regular cash dividends on both classes of stock at the same time, and, if the preferred holder wants cash in lieu of the new stock, usually he can sell his additional stock in the market.¹³

The cumulative feature, while it gives the stockholder real protection, is, however, quite different from the protection given the bondholder in case interest is defaulted. In the latter case positive legal action may be taken. In the former case the preferred holder can take no action, except in certain special cases to be discussed shortly, but must wait in the hope that eventually the company will improve its position to such an extent that preferred dividends can be paid. That this may be a long wait is proved by reference to such cases as

¹² *Commercial and Financial Chronicle*, Vol. 121, p. 2767

¹³ It does not always happen that the directors act as liberally as in the case of Willys-Overland. Where large accumulations have piled up the directors, who frequently control the common stock, often try to induce the preferred holders to make some sacrifices, on the plea of an equitable adjustment, in order that dividends may be resumed on both classes of stock. Take the case of the old Interboro-Metropolitan 5 per cent cumulative preferred stock in 1915. In order to give the common shareholders some chance to receive dividends, the preferred shareholders were asked to surrender their claim to unpaid dividends and to accept in lieu thereof new 6 per cent noncumulative preferred stock. As an inducement the directors offered to begin payment of dividends at once on the new stock. Regardless of their legal rights in a case of this kind the preferred stockholder is faced with the practical advantages of "having a bird in the hand rather than two in the bush." The prospect of an immediate return usually induces the majority of preferred stockholders to accept terms of this nature, although they might, in a legal contest, get better terms.

the American Hide & Leather and the International Mercantile Marine Companies. In the case of the former company there were, on April 1, 1925, back dividends of 142½ per cent accumulated on its preferred stocks. In the latter case, on May 15, 1927, the accumulations were 69 per cent.¹⁴

Preference as to assets.—In the case of preferred stock we find that, while preference is always given in respect to dividends, it may also be extended to include preferences as to assets. Where this idea is carried out, it is customary, in the event of involuntary dissolution, to give preference up to the par value of the stock only, whereas, in case of voluntary dissolution, preference is usually given up to an amount in excess of par, say, 110. This difference, or premium, which is so specified, assures the full operation of a redemption clause where such is present. Such a distinction between voluntary and involuntary dissolution is particularly necessary, where the corporation is given the right to call or to redeem its preferred stock at a premium. Should the preferred holder be entitled to only \$100, or par, in case of dissolution, either voluntary or involuntary, it would be a simple matter for the directors to vote to dissolve the corporation and to form a new one in order to retire the old stock at par. In this way they might, in effect, succeed in retiring the present preferred stock without the payment of any premium. On the other hand, where preference as to assets is not specifically set forth in the stock contract, the assumption is that preferred stock is preferred only in respect to dividends.¹⁵

It may at first appear that preference in respect to assets

¹⁴ As a further sidelight on the position of the preferred holder, note the plan for reorganizing the American Hide & Leather Company, approved in March, 1925. In substance this plan provided for reclassification of unissued preferred stock into 8 per cent prior preference stock, and for sale thereof to raise cash to purchase at par and cancel the 30,000 shares of the old preferred stock. In the plan, all accumulated dividends are to be wiped out and no allowance made therefor to the preferred holder. See *Commercial and Financial Chronicle*, Vol. 119, p. 1955. This plan was held up pending a suit by a group of preferred holders, but was approved by the N. J. Court of Error and Appeals, in May, 1925.

¹⁵ In a study made by A. S. Dewing in 1916, covering preferred stocks listed on the New York Stock Exchange, out of 41 preferred stock issues of 35 railroads only 4 were preferred as to assets, while out of 87 preferred stock issues of industrial concerns 56 were preferred as to assets in case of liquidation. See Dewing, Arthur S., "Financial Policy of Corporations," Vol. I, p. 117, 1920, Ronald Press, New York.

is of distinct value to the holder of a preferred stock. The idea is, of course, that such preference will afford him a real protection in respect to his original investment, or principal, in case of financial difficulties. Such is hardly the case, however, for corporations, as a rule, do not liquidate their property except when they are in extreme financial difficulty, and then only after all other means for continuing the business have been exhausted. Long before this extreme condition has been reached it is more than probable that the assets of the company will have been pledged or mortgaged, and that heavy bank loans will have been incurred which precede the preferred stock. Even where the assets are partially salvaged through receivership and reorganization, the preferred holders are usually required to make heavy sacrifices in order to rehabilitate the company. With this in mind we find in practice that preference as to assets may result in strengthening to some extent the preferred holder's position, but that this is a long way from assuring him that anywhere near his original investment will be salvaged in case of financial reverses.

Redeemable or callable preferred stock.—It frequently happens that preferred stocks are redeemable at some specified price, usually in excess of par. In fact, this provision is becoming increasingly common among new issues of preferred stocks, particularly public utilities.¹⁶ The reasons for the presence of this feature are very much the same as in the case of bonds. The corporation desires to leave the way open for retiring the issue at some subsequent date should the financial condition of the company so warrant. Where such redemption features are accompanied by a sinking fund clause, providing that the corporation shall lay aside so much each year out of earnings for retiring the preferred at the call price, we have a provision that may act to the advantage of the preferred holder, in that the equity behind the uncalled stock each year is increased as the total amount of the issue outstanding is decreased. Otherwise, the assumption is that the corporation will use the right to redeem its stock in much the same way that the callable feature is used to retire bonds. This provision is most likely to be exercised by the corporation at a time when interest rates are low and reinvestment difficult. The reasons for this are

¹⁶ *Ibid.*, p. 119.

the same as in the case of bond issues. Preferred stocks are in the nature of fixed obligations. If refinancing can be consummated at a lower rate of interest, or at a lower rate of dividends in the case of preferred stock issues, then it is to the advantage of the corporation to call in high interest or dividend securities and replace them with bonds having a lower coupon rate, or preferred stocks with a lower dividend rate. Or, possibly, a long period of rising prices or easy money rates has so stimulated business and increased profits that the corporation finds it easy to retire its bonds or preferred stocks out of surplus. In either case, the contract runs in favor of the corporation and only in exceptional cases in favor of the investor.

Voting rights and preferred stock.—The position of the preferred stockholder is sometimes jeopardized by withholding from him the right to participate in the management of the corporation. Frequently the sole voting power of the corporation rests with the common stock, except in reference to matters that vitally affect the preferred stockholder, such as the borrowing of money through the issue of bonds or the authorization of more preferred stock. In other words, even though the preferred stockholder is supposedly a partner in the enterprise, and receives his investment return on this supposition, he is, nevertheless, often excluded from all voice in the management of its affairs, except in respect to certain matters which affect him in a very vital way.

Even those provisions which give the preferred holder the right to vote on such matters as the issuance of bonds or subsequent preferred stock may turn out to be of small value. This is especially true unless the directors of the corporation are at the same time prevented from incurring a large floating debt by means of heavy bank borrowing. In other words, if the directors incur a heavy floating debt, the proceeds from which are used largely for permanent improvements, the affairs of the company may eventually reach a stage where the preferred stockholders are obliged to approve an issue of bonds for funding purposes in order to avoid unfriendly action, in the way of receivership proceedings, on the part of the banks, or short term creditors of the company.

In other cases the preferred holder may have voting power equal to the common holder, or partial voting power. The

degree to which voting power is extended in a given case is, of course, a matter which may be determined only by reference to the by-laws of the corporation which set forth the preferred stock contract.

Contingent voting rights.—Where the preferred stock is not accorded the right to vote in the first instance a contingent right is frequently given. That is, voting control may pass to the preferred stock after a certain number of consecutive dividends have been passed. Thus, in the case of the F. W. Woolworth Company, the preferred stock contract provides that the common stock alone shall have voting power except after three quarterly dividends on the preferred stock shall have defaulted.¹⁷ The advantages of such contingent voting power may be more apparent than real. Coming as it does after dividends have been defaulted, it usually means that the preferred stockholders are handed the tiller after the boat has been run on the rocks. There are many instances at hand, among which must be included the Winchester Company and the Gorton Pew Fisheries, where the condition of the company at the time the preferred holders came into voting control was so hopeless that the preferred holders derived but little solace from their rights.

Maintenance of liquid position.—Various other provisions that are sometimes used to protect the preferred holder refer to the liquid position of the corporation. Thus, in the case of the Richmond Hosiery Mills 8 per cent cumulative preferred stock, no dividends may be paid on the common that reduce the net quick assets of the company below 125 per cent of the par value of the outstanding preferred. While the details may differ in other cases where this kind of restriction is found, the underlying principle is the same. The purpose of the restriction is to prevent payment of cash dividends on common stock, where such payment tends substantially to injure the working capital of the company, and also to maintain sufficient liquid assets to provide for retiring the preferred stock at any time.

¹⁷ Bayuk Cigars, Inc., 7 per cent preferred has a somewhat more elaborate contract. Here the preferred stock as a class has the right to elect directors, if at any time net quick assets shall amount to less than 125 per cent of stock outstanding; default exists in sinking fund payment for one year; or default exists in four quarterly dividends.

Some value may be said to attach to such provisions, in that they anticipate a situation and may actually prevent it from materializing. The common stockholders, where such a provision exists, will naturally act more conservatively and, necessarily, will attempt to maintain the company in a strong cash position at all times, the result of which is beneficial to the preferred holder. On the other hand, should the earnings of the company decline, it is conceivable that it might become difficult or impossible to maintain the required liquid position. While the omission of common dividends at such a time would avoid aggravating the situation, it is not to be supposed that the directors could be compelled to increase net quick assets. In other words, the provision, while certainly valuable, does not assure the preferred holder that net quick assets will always be maintained in a certain ratio to the preferred stock outstanding.

Participating and convertible preferred stocks.—The most ideal type of preferred stock is one that permits some sort of participation in the earnings of the company beyond the stated dividend. Such a stock may permit participation in earnings after both preferred and common have received a stated dividend, or may permit conversion into common stock at some stated ratio. In such cases the preferred holder is given priority over other classes of stock in respect to earnings, which is the real reason for the existence of a preferred issue, and yet he is not excluded from his rights, as a partial owner of the business, to participate in its success. For the very reason that this class of stock is advantageous to the investor, so it is not a desirable type of security for the corporation to issue, since it means a greater number of shares over which earnings must be distributed in case the corporation becomes prosperous. It is, therefore, generally issued by corporations with a weak credit standing at the time financing is necessary. The desirable feature of participation or conversion is thus given to offset the low credit of the company. This does not mean that participating or convertible stocks are issued by weak companies only, for it may happen that the low credit condition of the company is merely a function of age. New companies, as a rule, must offer more attractions when issuing securities than old and established concerns, although their fundamental credit standing may actually be very high.

Midland Steel Products 8 per cent participating preferred.—The preferred stock of the Midland Steel Products Company is a good example of a participating preferred stock. This stock has preference as to assets and 8 per cent cumulative dividends, and, after the common receives \$4 per share, the preferred is entitled, as a class, to 80 per cent of all further distribution. In liquidating, or winding up, the affairs of the company, the preferred is first entitled to \$110 per share, the remaining assets to be divided, 80 per cent to the preferred holders and 20 per cent to the common holders. In this case it will be observed that the preferred holders participate in both earnings and assets. In other cases the right to participate may apply only to earnings.

Convertible preferred compared with participating preferred.—Where a preferred stock is convertible into the common stock of a company the situation is practically the same as when the bonds of a company are convertible into common stock. The preferred holder is given the right, under certain restrictions as to time and price, to convert his preferred issue into an issue that carries an unrestricted right to participate in the earnings of the company. This gives to the preferred holder a prior right to dividends while the company goes through its developmental period, and, when it becomes successful, allows him a wider participation in earnings through conversion. The essential difference between a participating and a convertible stock is that the holder of the latter, upon conversion, relinquishes all preferential rights and becomes once and for all a common holder. The former type of stock, on the other hand, continues indefinitely to carry both preference and participation rights.

Variations in combination features in any preferred issue, how determined.—We have up to this point merely described the more essential types of preferred stocks, or, rather, the more important provisions found in typical preferred stock contracts. We have also attempted to weigh the value of such provisions to the holder of preferred stocks. The cumulative feature, restrictions upon the payment of common dividends except when net quick assets are ample, and participation features are all more or less valuable. Contingent voting rights, restrictions on borrowing, and preferences as to assets may prove to be of little or no value. There are, of course, dif-

ferent combinations of these features found in various stocks, and even other restrictions may be found. It must be realized that the preferred stock contract is flexible and may be adjusted in the light of the particular situation at hand. In fact, the same company may have as many as three or four different types of preferred issues outstanding at the same time, varying in status from a prior cumulative preferred stock down to non-cumulative,¹⁸ nonvoting, preferred stock.

Preferred stocks, desirability of.—As a class preferred stocks, particularly those of industrial companies, are the least desirable of all securities. This is particularly true of non-cumulative issues, while participating or convertible issues may be classed as more desirable than common stocks, where the rights are liberally given. There are many who hold that preferred stocks are undesirable, because they have all the weaknesses of bonds, with none of their advantages; and all the weaknesses of common stocks, with none of their advantages.

The return on preferred stocks is fixed, as in the case of a bond, and hence they have many of the aspects of a credit instrument. Yet no legal rights are given in case of default, and the various restrictions which are designed to elevate the status of a preferred stock are usually impotent when they should be of the greatest value.¹⁹

¹⁸ A good example of a complicated capital structure is found in the case of the General Gas & Electric Corporation before recapitalization in 1925. This company had a "Class A" preferred which had preference over all other stock issues as to cumulative dividends of \$8 per annum. Class A and Class B stocks had preference equally over all other stock of the company in case of liquidation up to \$100 a share and accumulated dividends. Class B, no par, had preference as to assets equally with Class A, but was preferred as to \$7 cumulative dividends after all dividends had been paid on Class A. Class B also had a participating privilege, in that, whenever, in any calendar year, there shall have been declared the prescribed dividends on the Class A and Class B and on the convertible preferred stock (to be described) and \$6 per share on the common, any additional amount declared as dividends during the same calendar year shall be divided pro rata between each class then outstanding. The convertible preferred stock was no par, had preference to the extent of \$100 per share over the common in case of liquidation, and was entitled to a noncumulative dividend at the rate of \$6 per share per annum, before any dividends could be declared or paid on the common. This stock was convertible, share for share, into General Gas & Electric common. All three classes of preferred were noncallable.

¹⁹ The student will do well to investigate, among others, the following recent

It may be argued that, if the preferred issue goes bad, an investment in the common stock of the company would have been worse. This may be granted; but, after all, we are considering preferred stocks as a class, as compared to common stocks as a class. In other words, if we consider that the average investor limits his commitments entirely to preferred stocks, and even goes so far as to rely largely on the advices given him by reputable banking houses, he is bound, sooner or later, to suffer some capital losses. That is, some of the issues will go bad. On the other hand, he has no opportunities for making a real profit out of other issues, for investment preferred stocks are usually sold, in the first instance, close to par, and the limitation on dividend payments prevents such issues from ever advancing very far above this point. Contrast this with the case of an investor who invests solely in common stocks. True, he will suffer capital losses also, but with any kind of selection he will also have purchased some such issues as United Fruit, General Electric, General Motors, United States Steel, or Standard Oil of New Jersey. The capital gains realized from his successful ventures will more than offset his losses, if he is at all successful. If he is so poor a judge of stocks as to miss any good selections he should avoid both preferred and common stocks and put his savings in the savings bank or else buy only high grade bonds. The only profits to be made from preferred stocks come from the purchase of issues with large accumulations of back dividends, or else preferred stocks of companies whose present low state of credit stands some chance of future improvement.²⁰

issues of preferred stocks with fancy provisions, all of which were floated by reputable banking houses and yet have had decidedly checkered careers.

1. Winchester Company, 7 per cent cumulative preferred.
2. Gorton Pew Fisheries, 8 per cent preferred.
3. Columbia Graphophone, 8 per cent preferred.
4. B. B. & R. Knight, 8 per cent preferred. (This stock has about all of the provisions previously described, including a sinking fund provision. It paid regular dividends for one year. The first mortgage bonds of the company were quoted at 40 in 1926. The preferred stock was then worthless.)
5. Otis Steel, 7 per cent cumulative preferred.
6. A. E. Little Co., first preferred.

²⁰ Of course preferred issues may also be callable at 105 or 110 and thus afford some slight chance for gain to the purchaser, but this profit is after all negligible, as compared to the possibility of profit from appreciation in the value of common stocks. The student must also bear in mind that a preferred

Statistical study of return on preferred stock.—Excellent proof of the previous statements is found in a study made by S. F. Nicholson while at the Harvard Business School, covering the history of important industrial preferred stock issues brought out between January 1, 1915, and January 1, 1923. There were 607 issues included in this study. The average price of these issues at the time of issue was 99. On January 1, 1923, the average price of the whole group was 70½, after full allowance had been made for those issues which had been called at a premium. The median of time of issue was the latter part of 1918. The average dividend rate promised was a little over 7 per cent a year, so that, if the investor had made a random selection of preferred stocks during the years studied, his total interest yield would have been less than his present loss of principal.²¹

An argument used in favor of preferred stocks is based on the citation of several high grade issues, such as U. S. Steel Preferred, or General Electric Preferred. To be sure, these are good investments, but so are the common stocks of these companies. In fact, a commitment in the common stocks of either of these companies, or of equally strong companies, over a period of years will probably show an excellent return. A preferred stock to have a high rating must show earnings equal, at least, to two times dividend requirements, and preferably more. This means a substantial balance for the common, and this substantial balance goes without limit to the common holder and provides for him an ever increasing equity. When this balance is not earned, the preferred and common both suffer.

stock selling at very low levels, on account of the temporary embarrassment of the company, may also offer as good possibilities as a common for appreciation in principal. These are exceptional cases and do not invalidate our general argument.

²¹ Dewing, Arthur S., "The Rule of Economic Profits in the Return on Investments," *Harvard Business Review*, Vol. 1, No. 4, p. 462. On January 1, 1923, no quotations, not even from the issuing houses, could be obtained for 70 issues. Of the remainder 114 were quoted at less than 25; 169 from 26 to 90; 200 from 91 upward; 54 were called at par or above.

CHAPTER XI

COMMON STOCKS

Common stocks and what they represent.—The present section of our study, it will be recalled, has been devoted primarily to the contract aspects of various types of securities. Attention was first given to the credit instruments of corporations, that is, bonds and notes. The distinguishing characteristic of this entire group of securities is the contractual nature of the relationship between the corporation and the lender. In each instance there is a definite promise, on the part of the corporation, to pay principal and interest and to carry out other performances in the interest of the bondholders. Preferred stocks were next discussed, and here we found a type of security which is based on a contract, it is true, but which carries with it contingent claims only against the corporation. That is, the corporation agrees to do certain things, such as to pay dividends, *only under certain conditions*. In coming, finally, to common stocks we find a security which supposedly represents, or gives evidence of, unrestricted ownership in the business after all prior obligations have been met. The term "residual" ownership may express the idea more clearly than unrestricted ownership, since most corporations have preferred stock and bonds outstanding whose claims to assets and earnings precede the claims of the common stockholder. The latter, however, enjoy full ownership in all assets and earnings after prior claims have been satisfied, but are likewise charged with all the obligations incidental to ownership.

Residual equity.—This so-called residual equity in the business, that is, the ownership in the assets and earnings of the corporation after prior claims have been satisfied, is represented, ordinarily, by the common stock and surplus accounts on the books of the company. This can be shown most readily by reference to the following simple balance sheet:

BALANCE SHEET—CORPORATION X Y Z

<i>Assets</i>		<i>Liabilities</i>	
Plant and Equipment.....	\$1,000,000	First Mortgage Bonds, 6%..	\$ 750,000
Inventories	500,000	Preferred Stock, 7%.....	750,000
Accounts Receivable	500,000	Accounts Payable	250,000
Cash	500,000		
		Owed to Outsiders.....	\$1,750,000
Total	\$2,500,000	Leaving for Stockholders	
		Outstanding C o m m o n	
		Stock (par \$100).....	500,000
		Profit and Loss Surplus...	250,000
		Total	<u>\$2,500,000</u>

In the preceding balance sheet, assets are carried at \$2,500,000. The various equities in these assets are represented by the several accounts on the liability side of the statement, that is, the \$2,500,000 of assets are owned as follows: the first mortgage bonds have a claim against plant, equipment, and inventories up to \$750,000; after complete satisfaction of this claim, the next claim in order of precedence is that of the trade creditors. This is represented at \$250,000. Next in order is the claim of the preferred stockholders, totaling \$750,000. In other words, there are fixed claims against the assets of the corporation amounting to \$1,750,000. Whatever is left after the payment of these is the property of the shareholders and belongs to them ratably. By this we mean that each share of stock is entitled to its aliquot share of the entire remaining sum. We have assumed that these assets are worth just the amount at which they are carried on the company's books. In liquidation they may be worth more or less. Any shrinkage in the value of these assets applies first to the common stockholders' equity. Suppose, for example, that liquidation became necessary and the assets brought only \$2,000,000. All prior claims must be paid at par, so long as there are sufficient funds. In the assumed case this would be possible; but, after satisfying the \$1,750,000 of fixed or prior claims at par, only \$250,000 remains for the common stockholder. On the other hand, if the assets should prove to be worth \$3,000,000 on liquidation, the common stockholders get all of such increase. their return in such a case being not \$750,000, but \$1,250,000.

A like situation exists in respect to earnings. The various claims against income represented by the several security holders and creditors must be considered in the same order as

their claims against assets. Let us assume that, after paying all costs of operating the business, a profit of \$100,000 is shown. The first claim against these earnings is for bond interest, amounting to \$45,000. Thereafter dividends must be paid on the preferred stock before any distribution may be made on the common.¹ In the present instance, this amounts to \$52,500. The balance of \$2,500 is all that is available for the common stock. Again, let us assume that earnings increase to \$150,000. No further distribution is made to the bondholders or preferred stockholders, but all earnings after the above mentioned charges have been met belong to the common shareholder. Thus do we find a further reason for calling the common stockholders' claim a residual one.

Significance of par value.—What has been said in reference to the claims of the common stockholders in the assets of the company may logically raise a question in the reader's mind as to the significance of the par value of the common stock. It is at once apparent that the book value of the stock is not equal to the par value, as in the case of the other securities. In the present case, for instance, the stated value of \$100 a share does not mean that the corporation owes the common stockholder \$100 for each share of stock held; it does not mean that the stockholder has the right to participate in the assets of the corporation only up to \$100 a share; nor does it mean that the stock is worth exactly \$100 a share. It means simply that each of the 5,000 shares of the corporation's stock carries the right to participate equally with all the other shares in the assets and earnings of the corporation, after all other obligations have been met. In this case we would express the situation correctly if we stated that one share of stock represented one 5,000th of the total residual ownership of the corporation carried on the books at \$750,000. Par value in the case of common stock, therefore, is significant only when used in connection with the capital stock account of the corporation to express the fractional participation going with each share of such stock. In this case, the par value of the stock becomes

¹ We have not considered trade accounts here. In cases where these are represented in part by notes payable it is possible that some interest charges resulting therefrom will appear as a deduction from our gross income. Cash discounts, or failure to receive them, are items that are absorbed in operating expenses. For this reason we have not considered any charges from accounts payable as deductible from our gross income.

the numerator of the fraction, and the total stock outstanding the denominator.

No par stock.—It should be evident from the preceding discussion that the situation might have been expressed equally as well if the balance sheet had been set up somewhat as follows:

BALANCE SHEET—CORPORATION X Y Z

<i>Assets</i>		<i>Liabilities</i>	
Plant and Equipment.....	\$1,000,000	First Mortgage Bonds.....	\$ 750,000
Inventories	500,000	Preferred Stock	750,000
Accounts Receivable	500,000	Accounts Payable	250,000
Cash	500,000		
		Owed to Outsiders.....	\$1,750,000
Total	\$2,500,000	Common Stock Account Rep- resented by 5,000 Shares of Stock with No Par Value	750,000
		Total	\$2,500,000

Again, we have conveyed the meaning that each share of stock represents one 5,000th of the total residual equity of the corporation, which is carried on the books at \$750,000, although we have avoided the use of a stated par value. For convenience, we might have carried our common stock account at \$500,000, or at whatever figure represented the actual initial common stock investment. In this case surplus, which we may suppose represents that which has been accumulated from earnings, would be carried at \$250,000. The purpose of thus separating the common stock account into two parts is to permit the initial capital investment always to be carried at its original amount and to segregate it from earned surplus.²

² In other cases the common stock is carried at a nominal par, or, say, \$5 a share, the balance of the common stock equity being carried under the surplus account. Had this been done in our hypothetical case the accounts would have appeared as follows:

Common Stock (represented by 5,000 shares, nominal par, \$5) .	\$25,000
Surplus	725,000
	<u>\$750,000</u>

For a concise statement of no par stock see "No Par Stock," Conyington, Thomas, *Administration*, Vol. 1, No. 1, pp. 87-94. See also Hurdman, F. H., "Capital Stock of No Par Value," *Journal of Accountancy*, October, 1919, Vol. 28, No. 4, pp. 246-257, for discussion of accounting aspects of no par stock.

In any event, the actual book value of all stock outstanding is represented by the common stock and surplus accounts, or proprietorship items, as they are called in accounting practice.

The use of par value shares is much more satisfactory in the case of moneyed corporations, such as banks and trust companies, than in the case of so-called industrial enterprises. In the first type of concern we have assets whose values are measurable, and which are not subject to radical depreciation in the event of liquidation. The book value of the stock of such enterprises, therefore, represents, with some accuracy, liquidating value. In manufacturing, mining, mercantile, and other business corporations there may be an impairment of capital; intangible items may be carried on the books of the company to offset the stock account; or, conversely, gains may result that cause asset values to be greater than book values. In such ventures, therefore, it is argued that a closer approximation to the truth may be had if the capital stock is divided into a specified number of shares of no par value, each share simply stating that the owner is entitled to a proportionate part of the profits of the enterprise and of assets in case of dissolution.

The theory of no par value shares probably originated with the so-called "founders" shares commonly used in English promotions to represent the interests of the promoters, and not an actual cash investment. Thus Lough, in "Business Finance," writes:

In Great Britain it is a common practice to compensate the organizer of a corporation by giving him a final claim on earnings, which is valid only after all the claims of those who have furnished capital have been fully met. The shares which represent this claim are variously known as "founders'" shares, "management" shares, and "deferred" shares. Although this practice is frequently condemned, it seems at least as defensible as the custom in the United States in accordance with which the promoter of a corporation retains, by way of compensation, as much as he can of the common stock. Deferred, management, or founders' shares in England are usually of very small par value, most commonly one shilling per share. In case the corporation succeeds in fulfilling the expectations of its organizer, the founders' shares may come to receive large dividends and to possess a high market value altogether out of proportion to their nominal value. Indeed, there are instances in which separate companies have been formed in order to hold the

founders' shares and to distribute interest in them in a more convenient manner.³

The essential difficulty of par value shares, from an investment standpoint, is the chance that false ideas of value may be created by the statement of par value on the certificate. It is not at all uncommon, as first indicated, for the actual cash investment in an enterprise to be represented by bonds and preferred stock, while the common stock represents promotion services, good will, patents, or other intangibles. Whether these are actually carried on the books of the company or whether they are submerged by an inflation of tangible assets is immaterial. The essential point is that the par value does not necessarily represent an original cash investment of that amount, nor does it represent an equivalent true value of assets behind the stock. So long as this stock is held by the promoters who accept it in return for their services no harm is done. But when, after the organization has been completed and the company has been operating for some time, the promoters unload the stock on the public a false impression may be, and often is, created. A \$100 stock certificate selling at \$50 sounds like a bargain, although as a matter of fact no tangible asset value whatsoever may exist behind the stock.

In 1912 the state of New York, after considerable agitation, amended its corporation law to permit the issuance of stock with no par value. Since that time a number of other states have done likewise. Following the legal authorization of this kind of stock, many corporations have adopted it in corporate financing. When properly used the following advantages may be said to accrue from the use of no par stock:

1. In the first place, the corporate structure is simplified. It becomes possible, without misrepresentation, to create a contingent interest in profits, while representing the actual investment by bonds and preferred stocks. If the business subsequently becomes successful and a return in excess of prior claims is made, it appears in the form of dividends on the no par stock.

2. A second advantage lies in the fact that it is no longer necessary for stock to be issued for property at an inflated

³ Lough, W. H., "Business Finance," p. 83, 1922, Ronald Press, New York.

value, in order that the stock may be considered as fully paid and nonassessable.

3. The use of no par value stock focuses attention on book value as contrasted with par value. The use of no par stock eliminates the possibility of creating an impression that a stock with a \$100 par value, selling at a discount, is cheap.

4. The preceding statements apply to purchasers of stock as well as to the creditors of the corporation. Neither are deceived as to the actual cash investment, for it no longer becomes necessary to mark up assets or add intangible assets of high value in order to show assets equal to the par value of the stock.

5. Further, stock of no par value may be sold at any desired price. In the case of par value stock there is a legal requirement that stock in the first instance be fully paid. In order to sell such stock at a discount it is necessary to issue it first to directors or promoters for property at an inflated value. Part of such stock is then donated back to the treasury and may subsequently be sold at any value desired, the corporation originally having received assets equal (at the inflated value) to the par value. The mere fact that the directors may have overvalued the assets received for the stock is not open to dispute, for they are empowered to use their "discretion" in the matter of the prices paid for assets. The courts are reluctant to question the judgment of corporate officers in such matters.⁴

Examples of use of no par stock.—In cases where the stock of a corporation is without par value, it is customary to carry it in very much the same way as indicated in one or the other of our hypothetical examples. To ascertain the book value of a given share, therefore, it is necessary to divide total book value, including the capital stock account plus proprietorship reserves, by the number of shares outstanding.

The capital account of the General Motors Corporation,⁵ for example, was given, on December 31, 1925, as follows:

⁴ For a more complete discussion of no par stock from the corporation's point of view see Gerstenberg, C. W., "Financial Organization and Management," p. 116, 1924, Prentice-Hall, Inc., 70 Fifth Ave., New York.

⁵ For full report see *Commercial and Financial Chronicle*, Vol. 122, p. 1189.

CAPITAL ACCOUNT

7% Preferred Stock	\$104,619,200
6% Preferred Stock	2,175,700
6% Debenture Stock	3,121,100
Common Stock, No Par Value (5,161,599 shares)...	258,079,950
<hr/>	
Total Capital Stock.....	\$367,995,950
Interest of Minority Stockholders in subsidiary companies with respect to capital and surplus.....	1,961,817.65
Surplus	119,020,472.84
<hr/>	
Total Capital Stock and Surplus.....	<u>\$488,978,240.49</u>

It will be observed here that the original common stock account is carried at \$258,079,950, while earned surplus is carried at \$119,020,472.84. The total book value of all the common stock is thus \$377,100,422.85. This is the equivalent of about \$73 for each of the 5,161,599 shares of common outstanding.⁶

Voting control and common stock.—It has probably been inferred from our discussion of bonds and preferred stocks that the voting control, or management control, of the corporation frequently rests with the common stockholder. In any event, the common stock almost invariably has voting power, even though this may be shared with the preferred holder. It will be recalled, however, that the entire voting control may go to the preferred holder in cases where dividends on the preferred stock have been in default for a certain specified period.⁷

Division of common into two classes.—The statement that voting control of the company usually resides with the common stockholder needs further qualification, however, in that there has been a decided tendency during the past several years to divide common stock into two classes: Class A, nonvoting; and Class B, management, or voting, shares. The use of let-

⁶ Examples of no par stock abound in American corporation finance.

⁷ It may happen in reorganization that the bondholders assume voting control. In the case of Goodyear Tire & Rubber Company, which recently was in financial difficulties, the mortgage under which the 8 per cent first mortgage sinking bonds were issued in 1921 provided that the management of the company, through the right to elect a majority of the board of directors, should be vested in a group of selected bankers during the life of the bonds. This situation is unusual, however, and was the result of the forced financing brought about by the serious condition of the company's affairs after the rapid decline in the rubber market in 1920.

ters to designate the two classes may or may not be made, the essential point is the division of common stock into voting and nonvoting shares.⁸

Class A stock, dividend priorities.—These two classes of stock—A and B—may be the same in all respects except in the matter of voting rights, or the Class A stock may be given certain priorities over Class B stock in respect to dividends because of its inferior position in the matter of voting power. The common stock of the United Light & Power Corporation is divided into two classes, A and B, which are alike in all respects except that sole voting rights are vested in Class B. On the other hand, the common stock of the Servel Corporation was originally divided into two classes, A and B. There were authorized and outstanding 115,000 shares of Class A, and 85,000 shares of Class B (64,000 shares outstanding, February, 1925). Class A stock had preference up to \$.75 per share over Class B. After \$.75 has been paid on the Class B stock both classes thereafter shared equally *as a class* in the remaining earnings of the company. Class B stock had sole voting rights and was owned by the management of the company. This company has since been reorganized, but the principles contained in the original financing are worth noting.

Not only is the division of stock into Classes A and B here used to concentrate control of the company into a relatively few hands, but it is further utilized to augment the managers' participation in earnings without subsequent investment of funds in the company. Note that after specified dividends have been declared on A and B stock they both participate equally "as a class" in subsequent earnings. Yet the authorized B stock is all issued. Subsequent capital must be acquired by disposing of the A stock. True, the addition of capital acquired by selling more Class A stock may be expected to increase earnings, but one half of such increase, after limited dividends on all the stock outstanding, goes to the B holders, which means constantly increasing per share earnings as the capital investment of the company grows. While the amount going to A stock, *as a class*, increases, the total share must be divided among an increasing number of shares. For this reason "per share" earnings on the B stock may be expected to

⁸ The student will do well to read Ripley, William Z., "Main Street and Wall Street" (especially Chapter IV), 1927, Little, Brown & Co., Boston.

increase much more rapidly than "per share" earnings on the A stock.

Nonvoting stocks, desirability of: Dodge Brothers common.—The use of nonvoting common stocks may have elements of distinct danger to the holder, in that control of the company is lodged in the hands of a few people who usually have a small investment in the business, if any. A pertinent example of this very situation is found in the recent financing of Dodge Brothers, Incorporated. The entire stock of the old company was purchased in the early part of 1925 by Dillon, Read & Co., at a price of \$146,000,000 in cash. From this corporation the purchasers abstracted about \$14,000,000 in cash. A new company was formed to which the assets of the old company were assigned, in return for which the new company issued substantially \$75,000,000 of 6 per cent debenture bonds, 850,000 shares of no par 7 per cent preferred stock, 1,500,000 shares of Class A common, and 500,000 shares of Class B common. Dillon, Read & Co., thereupon sold the debenture bonds at 99, and the preferred stock, including as a bonus one share of Class A common, at 100. The entire Class B common was retained by the bankers. Class A and Class B common are alike in all respects, except that Class A has no voting power for any purpose and Class B has exclusive voting power for all purposes.⁹ It is apparent that the bankers who originally purchased the enterprise, even allowing for liberal selling commissions and expenses, received back from the investing public, which ultimately purchased the bonds and stock of the new company, more cash than was originally paid for the assets of the old company. And, in addition, the bankers held exclusive and irrevocable voting control of the new company through ownership of the Class B common, a control which represented no cash investment at all.

The present situation, therefore, is one where the permanent control of the company is in the hands of a group of men who have no cash investment whatsoever in the business. Furthermore, their control is absolute and permanent, so long as they hold the Class B stock and keep the concern solvent. The desirability of a situation of this kind from the standpoint of the Class A stockholder is debatable. It is true, that the ordi-

⁹ *The Commercial and Financial Chronicle*, Vol. 120, p. 1885.

nary minority holder of common stock frequently neglects to use his voting power at all, or, when he uses it, does so in a perfunctory way. Yet, where there is but one class of common stock with full voting power, control of the company is often in the market. That is, the present management, so long as things go well, may actually control the company with as little as 25 per cent of the stock. In such cases, however, there is always the possibility of a coalition of minority holders, where the management proposes to adopt questionable policies. In any event, a vociferous minority interest is a great preventive when there is mismanagement. Furthermore, in cases where the management itself has a substantial cash investment in the business, it is likely to be more conservative than when it is running the enterprise and participating in profits with no investment of its own.

The growing use of nonvoting stock is in conflict with the old theory that corporations should be run on democratic principles. It is true that complete democracy has never existed in corporate finance, except in exceptional cases. There have always been certain investors who were not greatly interested in the actual fortunes of the concern, their desire being primarily to lend money and to secure a fixed return. Such investors have accomplished this by taking notes or bonds, debenture or mortgage, as security, and by relying on the value of the corporate property rather than on management for safety. Even the preferred stockholder occupies a position somewhat analogous to the creditor, for he barter his share in the management of the corporation in return for the priorities accorded him in the preferred stock contract.

The development of large corporations, where the individual stockholders number in the thousands or hundreds of thousands, however, has led corporation lawyers and financiers to seek a more complete escape from the factor of democracy in corporate management. For years an effort has been made to accomplish this in various ways, such as by the formation of holding companies, by voting trusts, and by affiliations of interests among larger stockholders. The more recent tendency to issue two classes of stock, voting or management, and nonvoting, however, is a complete denial of the advantages which were supposed to accrue from the old order of things. Through the device of nonvoting stock there is complete ex-

clusion of a large majority of stockholders, who are actual investors in the corporation, from any share in its management. The dangers of this change in methods of corporate finance have been indicated: power is unaccompanied by the responsibility of having a cash investment in the enterprise.

On the other hand, it is not to be supposed that bankers or promoters can use this device in an unlimited fashion without assuming some responsibilities, for it has long been recognized as a common law principle that those elected to manage the affairs of a corporation accept a position of trusteeship. The corporate directors have always been charged with using their power of management in good faith, and they cannot deal with the corporation to their own advantage. It is not at all improbable, with the development of so-called management shares, that legal theory will so develop as to charge those who are in power by virtue of their ownership of the voting stock with a trusteeship to be exercised in the interest of the nonvoting shareholders. As this takes place many of the apparent evils of the nonvoting share idea will disappear. Under such a theory those acting in a fiduciary capacity will constantly be subject to court control and review. The methods by which the trust was acquired, the policies of management, and the relinquishment thereof will all be matters that may be questioned by the other interests in the corporation.¹⁰

Common stockholders, how classed.—In as much as common stock represents the residual ownership in an enterprise it may be said to represent ownership in economic goods, that is, factories, machinery, inventories, and all the other assets of the corporation. The common stockholder, therefore, must be classed distinctly as a debtor not as a creditor. This idea may be clarified somewhat if we again recall that the common shareholders as a class are usually borrowers, because, ordinarily, part of the corporate capital is acquired through the sale of bonds and notes, or of preferred stock. While theoretically preferred stock represents an ownership in the business, practically it differs but little from bonds. This division of the security holders of a corporation into two classes, creditor and debtor, emphasizes one of the most fundamental dis-

¹⁰ See "Protection of Non-Voting Stock," Berle, Adolf A., Jr., *Harvard Business Review*, Vol. 4, pp. 257-265.

inctions which can be made between common stock and all other types of securities, including even preferred stock where this is not participating.

Occupying the position of the residual owner of the business, after all fixed obligations are met, the common stockholder profits when prices rise and loses when prices fall. This is so obvious as to need little explanation. During a period of rising prices the residual equity of the business becomes worth more, if only because the physical assets of the business appreciate. Furthermore, rising prices usually mean increased profits, for inventories and goods in process increase in value before the manufacturing and selling processes are completed. Finally, it becomes increasingly easy to meet debts during a period of rising prices or depreciating money values, since dollars, in terms of goods, are relatively cheap.

Common stock and normal growth.—Another source of gain to the common stockholder, however, accrues quite independent of fluctuating prices. We refer here to the gradual but certain increase in population and to the consequent long time growth in the earning power of any well managed plant that produces an article of merit. Naturally, this increase is more certain to continue if the business is basic, that is, if it supplies necessities, rather than luxuries. A well managed corporation, which finances extensions largely out of current earnings, continues year by year to increase the earning power as well as asset value behind its common stock, simply because its markets expand as population increases. And as this growth takes place the company is in a position from time to time to pay dividends in stock which represent a division of those surplus earnings which are reinvested from year to year in the business instead of having been paid out as cash dividends.

Westinghouse Air Brake.—No better practical example of this point can be found than that of the Westinghouse Air Brake Company. This company has been in business since 1869 and has always been conservatively managed. It has no bonds or preferred stock outstanding, its capital structure consisting entirely of common stock. Furthermore, the company manufactures basic commodities that must be classed as necessities. It is also to be noted that the long time trend of sales is distinctly upward, despite temporary fluctuations

from year to year. The company has consistently reserved a substantial part of its earnings for expansion, and has declared stock dividends from time to time, which are tantamount to a distribution of surplus. Earnings, dividends paid, surplus accumulation, and stock dividend record for the company from 1911 to 1924 follows:

EARNINGS AND DIVIDEND POLICY—WESTINGHOUSE AIR BRAKE COMPANY

(1911 to 1924, Inclusive)

Year	Net Profits	—DIVIDENDS PAID—		Surplus	Stock Dividends
		Total	Per Share		
1927	\$ 8,520,010	\$5,046,223	\$4.50	\$2,573,787	4 for 1 split
1926	10,535,062	6,342,099	8.00	4,192,963	
1925	6,965,539	5,532,328	7.00	1,433,211	
1924	5,979,290	4,729,290	6.00	1,250,222	35%
1923	10,303,168	4,403,587	6.30	5,387,924	
1922	7,121,049	3,789,881	4.75	2,252,882	
1921	914,379	4,081,474	7.00	3,167,095 (def.)	
1920	5,342,232	4,081,282	7.00	1,260,950	
1919	6,192,383	4,072,491	7.00	1,761,077	
1918	7,461,900 *	5,076,977	7.00	2,384,923	
1917	6,449,144	5,566,414	7.25	872,730	20%
1916	9,585,928	3,140,972	13.00	6,444,956	
1915	1,882,137	3,140,660	8.00	1,258,523 (def.)	
1914	3,482,994	3,139,884	8.00	343,110	
1913	5,255,260	2,269,338	8.00	2,269,338	5%
1912	3,676,160	2,749,507	9.50	926,653	
1911	2,872,563	2,749,430	10.00	123,133	33 1/3%

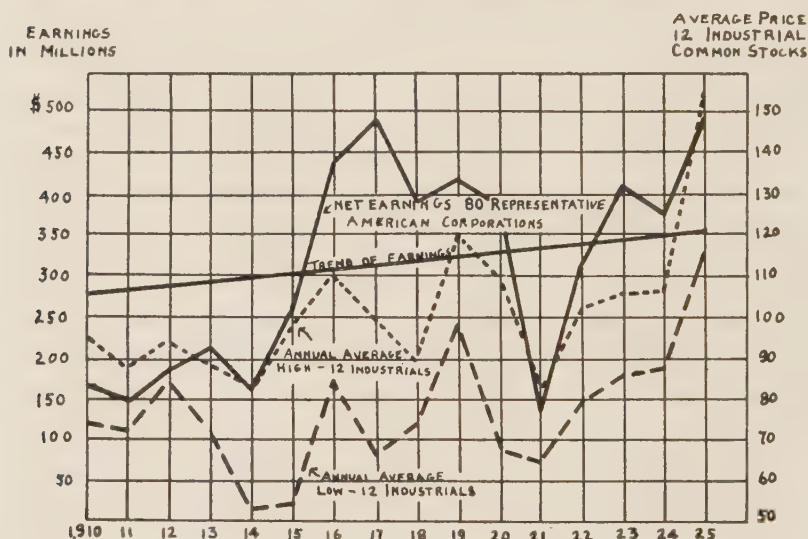
* Seventeen months.

Here are illustrated all the points just emphasized. During the period studied the trend line of earnings for this company has been distinctly upward. The management, however, has been conservative in respect to cash dividends and has consistently retained out of current earnings a fund sufficient to finance all expansions. This policy has naturally resulted in a constant increase in the capital investment of the company, which was first represented by the surplus account. Whenever the condition of the business as indicated by the growing earnings of the company and the amount of its surplus so warranted, liberal returns have been made to the stock-

holder in the form of stock dividends. In this way the stockholder has enjoyed a regular and moderate current cash dividend year in and year out, as well as an increase in his capital holdings at fairly regular intervals.

Study of earnings of 80 industrials, 1910 to 1925.—The idea emphasized in the preceding study, which has to do with only one company, is again illustrated by a more comprehensive study undertaken by the author, in which the annual net earnings of eighty industrial companies for the years 1910 to 1925, inclusive, were combined into an aggregate figure. The results of this study are shown on the accompanying chart.

Fig. 10.—Earnings of 80 American Industrial Corporations 1910 to 1925, Inclusive.



Here are plotted the actual aggregate earnings for the same eighty companies for the period covered, the average prices of industrial stocks, and the so-called trend line of earnings.

It is interesting to note that, while combined earnings fluctuated over a fairly wide area during the period studied, as did the market prices of industrial stocks, the trend for the period is distinctly upward. The fact that this is a normal situation among many corporations makes a long time commitment in good common stocks profitable. Conservatively man-

aged plants devote a reasonable portion of earnings each year to additions and extensions, which results in expanding earning power. It is true that annual earnings may fluctuate from year to year, reaching abnormally high levels during good years and sinking to low levels during years of depression, yet, over a period of ten years, the average earnings of any representative group of business corporations may be expected to show a substantial increase. The natural corollary to this is, of course, an increase in the average value of the capital stock of such companies.

Effect of rights and stock dividends on market value of common stocks.—The extent to which the market value of a corporation's stock equity advances as corporate earnings advance is not always reflected accurately by the current quotations for its stocks on the exchanges. The reason for this situation lies in the fact that corporations frequently give stockholders rights to subscribe to new stock at less than the current market quotation, or else declare stock dividends, either in terms of their own shares or through the shares of subsidiary companies. We shall trace briefly the effects of such operations on the market value of the individual shares of a corporation's stock, with the idea of showing that the current quotations for the corporate stock cannot always be used to determine changes that take place in the value of the concern's total stock equity.

Let us consider, first, the case of a corporation which frequently issues rights to its stockholders to subscribe to new capital stock. The common shares of corporation A, we will assume, sold at 150 on January 1, 1920. On January 2, 1920, stockholders were allowed to subscribe to one new share for each two old shares held, at \$100 a share.¹¹ The holder of 100 shares, then worth \$15,000, thus had the right to acquire 50 more shares by increasing his investment by \$5,000. His total investment, immediately after this operation, would have had a value of \$20,000.¹² Let us now assume that, by

¹¹ The rights so accorded are known as subscription rights. The rights attaching to each share of stock, which in the present case gives the stockholder the right to subscribe to $\frac{1}{2}$ share of stock, are known as New York rights. The right to subscribe to 1 new share of stock, in the present case consisting of two New York rights, is known as a Philadelphia right.

¹² This will be explained more fully in a later part of this chapter. For

January 1, 1923, the stock of this company was selling at \$140 a share and that further rights had been declared permitting the stockholders to subscribe at par to one new share for each 3 shares held. Our investor, having 150 shares of stock, again acquires 50 new shares by investing \$5,000. If we were again to compute the value of this man's holdings immediately after this operation we would find that it would equal the value of his holdings on January 1 (140×150 , or \$21,000) plus \$5,000, or \$26,000 in all. Let us now assume that on January 1, 1927, the stock is quoted at 145. The question now is, Has the investor made a capital gain during the period, even though the "per share" market quotation for his stock was less in 1927 than on January 1, 1920? This we can answer by going back to 1920 and noting the facts as they actually occurred. On January 1, 1920, our stockholder had an investment with a market value of \$15,000. Since that time he added \$10,000 in cash and, on January 1, 1927, he had 200 shares of stock worth 145 a share, or in all \$29,000. Thus, although the stock was quoted at 150, on January 1, 1920, and at 145 on January 1, 1927, the investor, had he availed himself of his rights to subscribe would have enjoyed a capital gain of \$4,000.¹³

Let us consider next the position he would have been in had he sold his rights instead of exercising them by subscribing to new stock. The first question is, What would these rights be worth? This we may proceed to find out by referring again to our figures. The holder of 100 shares on January 2, 1920, had the right to subscribe to one share of new stock for every two shares of old stock held. This privilege must have had a value, since the subscription price was less than the market value of the stock. Had the original owner of the rights not wished to subscribe, he could have sold his rights to some one who did. On the other hand, the value of rights are not

the time being it is sufficient to point out that on January 1 his holdings had a market value of \$15,000. The holder by subscribing to new stock adds \$5,000 to his investment. Regardless of what takes place subsequently the value of his 150 shares will be \$20,000 immediately after the subscription was consummated.

¹³ Computed by taking his January 1, 1920, holdings at \$15,000, adding thereto a subsequent cash investment of \$10,000, and subtracting from \$29,000.

as great as one might at first infer. Immediately after all rights have been exercised, the value of the stock declines. Let us again refer to our example. On January 1, 1920, two shares of stock represented an equity in the corporation worth \$300. On January 2 the corporation receives \$100 in cash for each new share of stock issued, which increases the value of the equity behind two old shares to \$400, but at the same time this operation results in increasing the number of shares outstanding by 50 per cent. There are now three new shares for two old ones. The stock accordingly declines in market value to $\frac{400}{300}$, or \$133.33 a share. The rights attaching to one share of stock, therefore, will be worth $\frac{33.33}{2}$, or \$16.66. That is, for each two shares of old stock the holder by adding \$100 may acquire a share of stock about to have a value of \$133.33. One half of the premium represents the value of the rights going with a single share. The value of this privilege may be computed by the following formula where X is the required value, P the difference between the market and the subscription prices, and R the percentage rate of increase:
$$X = \frac{P \times R}{1 + R}.$$

To revert to our figures, the holder of 100 shares, who, on January 2, sold his rights instead of exercising them, received in cash \$1,666. On January 2, 1923, the total value of his rights similarly computed was \$1,000. The total sum realized by the sale of rights, therefore, amounted to \$2,666.66. On the other hand, there is a loss of \$500, because our second investor's stock was quoted at only \$145 a share at the end of the period, contrasted with a quotation of \$150 at the beginning of the period. The total net gain in this case, therefore, is \$2,166.

It is important for us to understand why the gain is less in the second case than in the first. The essential reason lies in the fact that, when a stockholder sells his rights instead of exercising them, he really disposes of a part of his investment in the enterprise. In the present case, after the first rights had been exercised, the stock fell in value from \$150 to \$133.33 a share, an amount represented by the value of the rights going with each share. The man who sold his rights,

therefore, invited a new holder to acquire new stock by adding to the corporations' assets only \$100 for each share acquired, as contrasted with a previous value for this equity of \$150. The value of the total assets, or net worth, of the corporation is thus increased at a slower rate than is the number of shares of common stock outstanding. The holder who fails to exercise his rights, therefore, suffers a loss in his proportionate ownership in the corporation's assets measured by the value of his rights. This explains why the man who exercised his rights in the preceding case made more than the man who sold his rights. The total value of the net worth of the corporation increased over the period by an amount in excess of the new cash put in. In each instance the stock recovered some of the losses incurred when it sold "ex rights." The first man, by increasing his holdings in both instances, carried more stock than the second, and, therefore, made a profit on a greater number of shares as the result of the price advances in the stock.

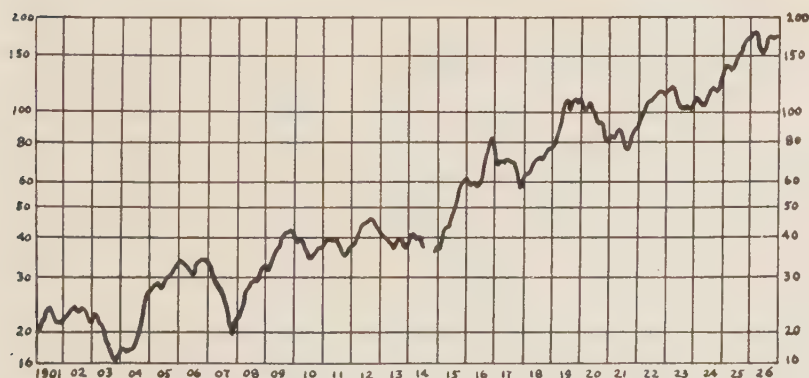
Effect of stock dividends on current quotations.—The next type of financing which destroys the validity of current stock quotations as a measure of the real increase in the market value of corporate equities is the declaration of stock dividends. Let us assume that corporation A, of whose common stock our investor holds 100 shares, declares a stock dividend of 100 per cent payable January 2, 1920. On January 1, the stock is quoted at 150. On January 2 it will obviously sell ex dividend at \$75 per share, for at that time there are two shares outstanding in the place of one old share. By January 1, 1923, however, the stock advances to 100. On January 2, 1923, another stock dividend of 50 per cent is paid, and on January 1, 1927, the stock sells at \$90 a share. What is the market value of the equity represented by one old (1920) share of stock? On January 2, 1920, our investor got one share of new stock for each old share held, giving him at that time a total of 200 shares. On January 2, 1923, he received 100 more shares, giving him 300 shares in all. The value of his holdings was \$15,000 on January 1, 1920, and \$27,000 on January 1, 1927. Thus, although the stock was quoted at 60 points less in 1927 than in 1920, there had been an increase of 80 per cent in the value of this

man's original holdings, although he was not required to advance any more cash. Much the same process takes place when dividends are declared in the stock of subsidiary companies.

It is because of these factors that the ordinary market averages as quoted in current publications fail, over a period of years, to show in true fashion the increase that takes place in the market values of stock equities. In the chart shown on page 244 the curve for industrial stock prices fails to give a correct idea of the real increase that took place in the market values of the ownership equities of these companies over the period covered, for the very reason that, over the period, many of these corporations gave subscription rights to their stockholders and declared stock dividends.

The following chart, however, which is constructed on an entirely different principle, does show the way in which ownership equities in corporations increase over a period of years. Here it is assumed that an investment of approximately \$1,000 is made in the common shares of twenty representative common stocks, on January 1, 1901, at the then existing prices. The market value of this original investment of about \$20,000, with proper adjustment for stock dividends and rights, is then traced through each year for the period from 1901 to 1926.

Fig. 11.—Appraisal of the Market Value of Industrial Equities: Monthly, 1901–1926 (Unit \$1,000).



Smith, E. L., "Market Value of Industrial Equities," *The Review of Economic Statistics*, Vol. IX, No. 1, p. 37.

STOCKS USED

American Agr. Chem.	American Woolen
American Car & Foundry	Consolidated Gas
American Coal Mining	General Electric
American Ice	International Paper
American Linseed	National Biscuit
American Malting	Pacific Mail
American Smelting	Standard Oil of New Jersey
American Sugar Refining	U. S. Rubber
American Tel. & Tel.	U. S. Leather
American Tobacco	U. S. Steel

A study of this chart shows clearly the result that may be expected over a period of time from a composite investment in common stocks. It is highly important to recognize, however, that an appreciation of this sort is in no way certain, if only one or a small number of stocks is selected, or if the investment is held for only a short time. Our entire discussion of common stock investments is based on the assumption that a composite and diversified list of stocks is purchased and held. Any given stock is likely to go bad; but if a sufficient spread of one's investments is made over twenty or more reasonably well selected stocks, then there is a strong possibility that a capital gain will result in the future as in the past.

Common Stocks versus Bonds.—Several interesting studies have recently been made with the idea of showing the desirability of investing in common stocks, as compared to other classes of securities. The results of these researches have been uniformly favorable to common stocks. One of the best of such studies was published in 1925 under the title, "Common Stocks as Long Term Investments."¹⁴ In this connection the risks of bond investment arising through fluctuations in the price level are clearly shown. Furthermore, a number of tests were made covering various periods in our financial history, with the idea of determining the relative profits derived from the investment of a sum of \$100,000 in high grade bonds as compared to a similar sum invested entirely

¹⁴ Smith, Edgar L., "Common Stock as Long Term Investments," 1925, Macmillan Co., New York. It is strongly recommended that the student read this book in its entirety, as it demonstrates adequately the fundamental nature of common stock investment and shows statistically the result that may be expected from an investment program confined entirely to common stocks.

in stocks. The results of these tests are summarized in the following table:¹⁵

				Total Advantage of Stocks over Bonds *
Period				
Test No. 1,	1901-1922	22 years	.....	\$16,400.94
Test No. 2,	1901-1922	22 years	.....	9,242.26
Test No. 3,	1901-1922	22 years	.....	21,954.72
Test No. 4,	1880-1899	20 years	.....	11,982.04
Test No. 5,	1866-1885	20 years	.....	2,966.85
Test No. 6,	1866-1885	20 years	.....	-1,012.00
Test No. 7,	1892-1911	20 years	.....	11,723.80
Test No. 8,	1906-1922	17 years	.....	6,651.01
Test No. 8a,	1906-1922	17 years	.....	4,938.08
Test No. 9,	1901-1922	22 years, railroads	.....	13,734.72
Test No. 10,	1901-1922	22 years, railroads	.....	3,329.72
Test No. 11,	1901-1922	22 years, railroads	.....	17,140.25

* Based on an investment of approximately \$10,000 in ten diversified common stocks of large companies and an equal amount of high grade bonds.

In making these tests the stocks used were selected on an arbitrary or mechanical basis in order to avoid the danger of being influenced by hindsight. As a matter of fact, the stocks used in nearly all cases were the ten most active stocks at the beginning of the period studied. In other words, no effort was made to select "sound" stocks. A greater profit might be expected had this been done. Varying periods were likewise used in an effort to cover intervals of falling, as well as of rising, prices and to use years unfavorable as well as favorable for starting and ending the two investment programs. In every case except one, it will be observed that the results are more favorable to the purchaser of stocks than to the purchaser of bonds.

From the studies made in this book the following conclusions are drawn by the author in respect to the law of increasing stock values and income return:¹⁶

1. Over a period of years, the principal value of a well diversified holding of the common stocks of representative corporations, in essential industries, tends to increase in accordance with the operation of compound interest.

2. Such stock holdings may be relied upon over a term of years to pay an average income return on such increasing values of something more than the average current rate on commercial paper.

¹⁵ *Ibid*, p. 20.

¹⁶ *Ibid*, p. 79.

Recent discussions of this nature have had a wide effect in awakening interest in common stocks as an investment medium. The old idea that bonds and preferred stocks constitute the only safe vehicle of investment and that common stocks are solely a speculative medium has rapidly changed, and to-day many investors who formerly purchased nothing but bonds are changing their investment programs to include common stocks.

Common stocks during next decade, adverse factors.—There is, of course, the danger in some cases that this shift may be carried too far. While it is true that common stocks serve a real purpose in an investment program, by enabling the investor to hedge against unfavorable movements in the purchasing power of money, one cannot be entirely certain that conditions in the immediate future will be as favorable to common stock investments as in the past.¹⁷ In the first place, there is a feeling prevailing in many quarters that, at present, we may be on the threshold of a period of falling prices which will continue for some time. We shall not argue as to the possibility of such a situation, although it is easily possible that the course of prices for the next fifteen or twenty years may follow the same path as prices after the Napoleonic and Civil wars. If this is true, bonds, the income and principal of which are fixed, would be the better type of investment, because the value of such instruments in terms of purchasing power would appreciate.

Furthermore, there is at least a reasonable doubt that the rapid growth which our industries have enjoyed since the opening of the present century can be maintained. It is conceivable that we will soon witness a change in our industrial activity from an "exploiting" to an "operating" basis. With this in mind it becomes necessary, in projecting our policies into the future, to consider whether the same gains may be expected from common stock investment during the next twenty-five years as were enjoyed during the past twenty-five.

It must also be recognized that, by careful selection, it is possible to raise the income received on bond investments.

¹⁷ An especially good criticism of Smith's book may be found in the *Boston Evening Transcript*, March 25, 1925. "Bonds vs. Stocks for Long Term Investment," by B. D. Nash. We have taken the liberty of adapting the essential arguments contained in this article to our present discussion.

There are many bonds in which the market estimate of risk is greater than the actual risk involved.¹⁸ In other words, by spreading one's bond investments rather widely over lower grades of bonds, it is possible to raise the actual income received from the entire fund, despite occasional losses, to a point above that which might be realized from investments chosen entirely from high grade bonds.

Finally, the effect of changes in the rate of interest on bond values must be considered. As money rates decline, bonds always enhance in value, because, at such times, they must sell at higher prices to give an effective yield corresponding to the market rate. The converse may be said in respect to increasing interest rates. At times in the business cycle, therefore, when interest rates are high and bond prices are low, conservative investment policies warrant bond purchases, if only the gain through enhancement in principal is considered. Conversely, when interest rates are low long term bonds may be sold and the proceeds invested in short term notes or stocks, if the price averages are satisfactory.

We emphasize these arguments in favor of bond investment as contrasted to stock investment largely to point out the desirability of a proper diversification between both types of security. In our ever changing financial structure, it is often, if not always, impossible to predict with accuracy the course of events for more than a few months in advance. Wise policies, therefore, based on the theory that as much risk as possible should always be eliminated, take this situation into account. In many respects a division of investments between stocks and bonds is in the nature of a hedge. Many factors which adversely affect one type of security will favorably affect the other.

Other inherent dangers in common stock investment.—Much has been said concerning the advantages of common stocks as a medium of investment, a large part of which is doubtless true. Despite the enthusiasm which has recently been shown for common stocks as an investment medium, however, there are certain further points that must be fully recognized by the investor who contemplates extensive pur-

¹⁸ See Dewing, Arthur S., "The Rule of Economic Profits in the Return on Investments," *Harvard Business Review*, Vol. 1, No. 4, pp. 451-463.

chases of this type of security. Some of the practical aspects of common stock investing may profitably be discussed at this time. In the first place, it must be recognized that common stocks fluctuate over a much wider range than do other classes of security. This applies not only to more speculative stocks, but to the most conservative issues as well. Current price movements among common stocks are often violent and unpredictable. For this reason the investor is often inveigled into a position where he is influenced, not by the ultimate results which, originally, he contemplated, but by current market movements. To put this concretely, let us suppose that a given investor starts out and purchases \$50,000 of common stocks, well selected, we will grant, with the idea of holding them over a period of years. His action is prompted, we assume, by reading of the ultimate profits that may be made from a program of this kind. After owning these stocks for three or four months we will further assume that a violent reaction takes place in the market and that a drop of, say, 20 per cent takes place in the stocks he purchases. On a \$50,000 commitment this represents a shrinkage of \$10,000 in market values. A situation of this kind is disturbing to one who is not accustomed to the behavior of the market and often leads the investor to sell, rather than to face the prospect of further loss.

On the other hand, it sometimes happens that market prices go up, with the result that the purchaser has a book profit. There is always a temptation to sell and to convert this into a real profit. Just as soon, however, as the investor begins to purchase stocks with the idea of making quick profits, or trading profits, as we shall call them, he becomes a trader rather than an investor, and the entire technique of trading is fundamentally different from that of investing. After his quick profits he may be decidedly perplexed as to when to get back into the market, particularly, if stocks continue upward. His reëntrance is more than likely to be at the top of a movement rather than at the bottom.

The psychological aspects of the situation must, therefore, be considered before one decides to make proportionately large commitments in common stocks. And it must also be recognized that, while many common stocks have a wide market, they do not necessarily constitute an ideal liquid invest-

ment. A liquid investment is one which may readily be turned into cash without a loss. Common stocks may readily be converted into cash, it is true, but, conceivably, the process may involve a substantial loss.

The necessity for adequate diversification in common stock investments cannot be overemphasized. Dealing, in this instance, with the least secure of all the corporation's securities, the chance of loss in any one case is very real. Common stocks are the first securities to suffer in the event of financial difficulties, and their owners suffer the most severe losses of any of the corporation's security holders at such times. The only reason why common stocks are in favor at all is because of the relative certainty that a *composite* investment spread over a wide group of stocks will prove profitable over a period of years.

On this basis, it is necessary to seek diversity, not only among different corporations but also among different industries, and to select within each group or industry the stocks of those corporations which have a commanding position and which exhibit proper ability to expand. In the long run, the greatest profits are made by older, well established, and well managed corporations, not by the new and untried companies. For every one new company which is successful there are many which prove failures. Thus, regardless of what one may say of common stocks as a class for investment purposes, there is, nevertheless, the problem of selection. This is the real crux on which the ultimate fate of the investment will depend.

Low and high dividend yield common stocks.—Another point of interest in connection with common stock investing centers around the question whether earnings or current dividends should be the guiding motive in making selections. At first glance one is always tempted to purchase stocks, other things being reasonably equal, which hold forth the largest opportunities for current yield. It is doubtful, however, whether this policy will prove as successful over a period of years as one which is based on the purchase of stocks with large earning power, but which pay relatively small cash dividends. In the latter case, the assumption is that the corporation is growing from funds accumulated out of earnings. It has already been suggested that, so long as the business can

LOW YIELD GROUP

(The following tabulation shows the result of investing \$1,000 in the common stock of each of the companies named at a price halfway between the high and the low of 1913 and carrying the investment through to 1924.)

	Initial	YIELD ON 1913 COST						Market Value	
		1914	1915	1920	1921	1922	1924	Average	Jan. 1-July 1 1924
1. American Power & Light.....	4.6%	6.2%	6.2%	6.2%	6.2%	10.8%	15.7%	7.98%	\$6,160
2. American Radiator.....	2.22	2.8	4.29	7.65	6.44	6.44	9.66	5.41	2,580
3. Del. Lac. & Western.....	4.84	4.84	4.84	4.84	4.84	4.36	5.82	5.24	630
4. Johns Manville.....	3.6	3.6	0	9.1	9.1	45.6	21.8	11.9	7,920
5. Procter & Gamble.....	2.99	3.11	3.23	4.89	5.09	5.29	5.72	4.43	1,940
6. Springfield Fire & Marine.....	4	5	5	8	8	8	11.2	6.55	2,240
7. Standard Oil of Kentucky.....	1.93	9.18	9.37	14.05	14.05	28.92	41.66	17.99	5,585
8. Western Union Tel. Co.....	4.6	6	6.5	10.81	10.81	10.81	10.81	9.39	1,720
9. R. J. Reynolds.....	4.41	5.99	8.24	3.72	11.98	17.97	20.2	9.52	4,130
10. F. W. Woolworth.....	4.65	6.18	6.95	8.24	9.27	9.27	10.72	8.92	9,930
11. American Car & Foundry.....	4.54	4.54	4.54	27.24	27.24	27.24	28.3	16.85	4,560
12. Baldwin Locomotive.....	4.44	4.44	0	15.54	15.54	15.54	15.55	7.22	3,600
13. Quaker Oats.....	4.21	4.21	4.21	7	2.56	2.31	13.05	5.57	2,380
14. United Fruit.....	4.84	4.84	4.84	6.8	12.1	9.68	13.33	7.55	3,460
15. Ingersoll Rand.....	4.16	5.2	15.62	12.5	12.5	12.5	70	27.3	6,230
16. Sears Roebuck & Co.....	3.82	3.82	3.82	8.6	8.6	8.6	8.6	7.61	1,480
17. Amoskeag Mfg. Co.....	4.46	4.46	4.46	17.84	17.84	17.84	0	8.06	2,950
18. Standard Oil of California.....	4.34	4.34	4.34	12.17	15.65	13.91	27.83	12.3	4,380
19. Standard Oil of New York.....	1.21	8.08	8.08	16.16	16.16	24.24	16.9	13.33	4,720
20. Vacuum Oil.....	3.07	3.07	3.83	3.83	3.83	7.66	23	6.86	5,250
Average.....	3.35%	4.99%	5.42%	10.27%	10.90%	14.36%	18.48%	10.00%	\$81,840
Original Investment.....									20,000
Appreciation of Principal.....									\$61,840
Average Profit on Each Stock.....									\$3,092

profitably employ surplus earnings, it is to the stockholders' advantage that earnings be retained in the business instead of being paid out as dividends. It often happens, therefore, that the purchase of stocks with low cash dividends, but with growing earnings, proves more profitable than the purchase of stocks with a high current dividend yield.

This situation is adequately illustrated by the tables on pages 256 and 257. In the first one, headed, High Yield Group, are shown the results of an initial investment of \$1,000 in each of twenty common stocks with a high current yield made in the year 1913 and carried through the year 1924. The second table, headed, Low Yield Group, gives the results of a similar investment in stocks with a low initial yield.

The difference between the two results is rather surprising. In the first case, increases in subsequent dividends raised the original yield of 6.66 per cent to 7.96, while the appreciation in the market value of the stock between the first and the last year was only \$11,023. In the second group the original current yield was raised from 3.35 per cent to 10 per cent, while there was an appreciation of \$61,840 in the principal value of the holdings.

The foregoing discussion of common stocks brings to a close the present section, which has been devoted primarily to the nature of different types of securities and the contract aspects thereof. The various general methods of financial analysis that may be employed in selecting desirable investments and the modifications found necessary in order to adapt fundamental theories of analysis to specific industries will next be considered.

PART III

INVESTMENTS, FINANCIAL ANALYSIS

CHAPTER XII

FINANCIAL AND INVESTING—GENERAL

Investor's relation with corporation, permanency of.—The investor's relations with the corporation are more or less permanent, which necessitates a careful study of its management and financial condition. The contractual features present in a given security are important and deserve very careful study, yet the ultimate investment value of a security depends on others factors as well. Of what use are the most stringent promises of a corporation to maintain a certain ratio of current assets to current liabilities, to provide for annual sinking funds, to pay interest or principal, or to carry out any of the other promises found in typical bond or preferred stock contracts, if the corporation is unable to earn enough to pay its operating expenses? On the other hand, the simple, unsecured promise of another corporation, with healthy and expanding earnings, in the hands of competent and honest management, may involve a minimum of investment risk.

It may seem at first that no very intricate problem is involved in appraising the exact financial condition of a corporation at a given time, but that this may be done by a cursory inspection of its current balance sheets and income accounts. Such might be the case if one were interested only in conditions at the moment. This, however, is not the general situation confronting the man who contemplates the purchase of a corporation's securities. Except in those relatively few instances where short term notes are purchased, the investor, whether he buys bonds, preferred stocks, or common stocks, trusts his funds to the enterprise for a substantial period of time. In a great majority of cases he does this without retaining an effective voice in the subsequent management of the corporation's affairs, for only in unusual cases does the investor, by virtue of the size of his interest, acquire a dominating influence in determining corporate policies.

The purchaser of bonds or notes may look forward to an ultimate repayment of principal when the obligation becomes due, although the maturity of bonds is frequently so remote that it has no practical significance. The purchaser of preferred or common stocks, on the other hand, can terminate his relations with the enterprise only by selling his holdings therein. The preferred stockholder, it is true, may receive his principal back, where the corporation exercises a call or redemption privilege, and both preferred and common holders may receive their principal from the corporation as a result of liquidation. So far as the investor is concerned, however, there is no certainty as to when the call privilege will be exercised, while the liquidation of corporations is an unusual event and may result in complete loss of principal rather than in a return thereof.

This more or less permanent relationship into which investors enter with the users of their funds makes it imperative for them to inquire not only as to the present financial status of the borrowing corporation, but as to its past record and future prospects as well. This applies whether they contemplate the purchase of first mortgage bonds, preferred stocks, or common stocks. On the other hand, one must grant that the stockholders of a corporation have a somewhat more vital stake in the success of the enterprise than the bondholders. The bondholders, and, in fact, the preferred stockholders, are reasonably content if charges and dividends are earned by a sufficient margin. Beyond this their interest ceases. The common stockholders, however, require that the corporation expand and that earnings increase, for it is in this way that their investment will prove most profitable.

In other words, quite apart from a consideration of the particular type of stock or bond purchased, the manner in which it is secured, its priorities over the other obligations of the corporation, and the various restrictions and benefits found in the accompanying contract, investors are also interested in those factors bearing on the financial stability of the issuing corporation, its position in the industry, its prospects for growth, the particular risks inherent in the industry, the previous record of the management in control, and the financial record and existing condition of the company. These are all matters of vital concern to the investor and should be care-

fully analyzed in respect to every commitment. Corporate investments have been referred to here, but the need for an accurate financial analysis applies as well to the purchase of government, state, and municipal securities.

Methods of analysis for different types of enterprises.—

In developing this phase of the problem, it is convenient to set up a classification of corporations according to the nature of the business in which they are engaged. For, with certain exceptions, the methods of analysis vary widely according to the nature of the enterprise. It is quite obvious that many of the tests that are adapted to analyzing the securities of cotton mills will prove worthless when studying railroad securities. Similarly a different set of tests will have to be worked out for municipal bonds than would be used in connection with motor stocks. A classification of this sort is further helpful, in that it focuses attention in the first instance on those broad, underlying influences which are related to entire industries. It is all right to make a careful analysis of the securities of a particular traction company, for example, and even to determine that they rank high in contrast to the securities of other traction companies; but this does not answer the question, "Is it advisable at present to purchase any traction securities?" The same might be said of the cotton textile industry, of the woolen and worsted industry, or in fact of any industry at some time or other. It is vitally important that the investor orient himself in a general way with the history, the status, and the prospects of the industry in which the corporation is engaged before he buys its securities.

Management, importance of.—While it is true that special consideration will have to be given to the proper methods of analyzing different kinds of businesses, there are, nevertheless, certain observations so general in their application that they may be said to apply to all private corporations. These are considered at some length in the present chapter. One of the most important and least tangible of all the factors contributing to the success of an enterprise is its management. What special genius inspired an unknown and unassuming mechanic by the name of Henry Ford so to organize a small automobile company in 1903 that an initial capital of \$25,000 was made to attain to a value of over \$1,000,000,000 in less than

twenty-five years, to say nothing of producing other millions which were paid to the original investors in the form of dividends during this period? American industrial and financial history is replete with similar figures. Recall briefly what Vanderbilt did for the New York Central Railroad; James J. Hill, for the roads of the Northwest; and Harriman, for the great western roads. In the steel industry, the name of Andrew Carnegie stands out; and the firm of Stone & Webster is to-day recognized as one of the strongest management companies in the public utility field.

Spectacular success is often attained by the dominating influence of one man; but, in ordinary practice, the investor is perhaps more interested in the existence of a solid, self-perpetuating, and proved management with a past record of honest and efficient performance. Companies such as the General Electric, the Westinghouse Air Brake, and the United Fruit are typical examples of well-managed enterprises with enviable records of success and fair treatment of security holders. This list could easily be extended to considerable length. On the other hand, a long list could easily be made to include companies that have been wrecked by poor management. The New York, New Haven & Hartford Railroad, for example, is to-day suffering from the costly mistakes of the Mellen régime, which ended as far back as 1913, although the present management has gone a long way toward restoring the road to its former position.

It is, of course, difficult to formulate precise rules for the investor to follow in studying the management of corporations. To a considerable extent the results of management are shown in the financial reports of the company. This is eventually true in all cases; but it is entirely possible, in certain enterprises, for poor management to be concealed for years, so far as the current reports of the company are concerned. This is particularly true of those companies which are engaged in financial businesses, such as banks, mortgage companies, insurance companies, investment trusts, and the like. In these enterprises, management is the prime factor in determining the success or the failure of the company, yet the character of the management of such companies is often not recorded in current operating results at all. In order to emphasize this point, consider the case of a commercial bank. It will be recalled that one of the essential functions of a bank

is the lending of money or credit to its customers. It is in this way that a substantial portion of its funds is employed, although banks also invest in securities.

The profits of a bank will depend in part on its ability to extend loans and discounts, for the larger this item, the greater the interest or discount received. Its earnings will also depend in part on the profitableness of its investments. There are many other sources of income, to be sure, but these two items are important ones. The significant point in this connection is that, under proper management, the loans and discounts of the bank will be carefully selected. Credit will be extended only to those concerns and individuals whose financial ability to pay according to the terms of their agreements is unquestioned. Investments will be similarly chosen. Under poor management undesirable loans will be made and low grade securities purchased. Yet this situation may not be indicated by the balance sheets of the bank for a considerable period, because loans are often carried at their face value until, for a definite reason, they have to be written down. Much the same situation applies to the investments of the bank. Under poor management, therefore, it is conceivable that current earnings may be shown in excess of what they actually would be if proper adjustments were made to offset the eventual losses that are bound to occur if proper care is not exercised.

A somewhat similar situation may occur in the case of mortgage companies. The principal business of such concerns is the loaning of money on real estate mortgages, and the pledging of these loans or mortgages as collateral against which bonds are issued.

A typical balance sheet for such a company would be as follows:

BALANCE SHEET OF HOME LOAN COMPANY, DECEMBER 31, 1926

<i>Assets</i>		<i>Liabilities</i>	
Mortgages, Notes and Loans	\$5,650,000	Capital Stock	\$ 500,000
U. S. Government and		Bonds	5,000,000
Other Securities	435,000	Accrued Interest	30,000
Accrued Interest	51,000	Misc. Accounts Payable	26,000
Overdue Interest	25,000	Notes Payable	436,000
Cash	150,000	Surplus	751,000
Real Estate	432,000		
	<u>\$6,743,000</u>		<u>\$6,743,000</u>

It is evident that this company makes the greater part of its profit by charging for its loans a higher rate of interest than it is required to pay for the use of the money it borrows. On the other hand, the ultimate value of the company's securities, stocks as well as bonds, will depend on the character of its mortgage loans. If a low grade of loan is taken the company can charge higher rates and additional bonuses, thus increasing its earnings. On the other hand, the character of its principal assets is lowered and eventually the situation may become serious if large losses have to be taken on its investments. While this situation is going on, however, there may be no evidence to warn the purchaser of the company's securities. For this reason, the average investor in such a company must rely to a large extent on the character and ability of those who manage its affairs.

It is not necessary to repeat our discussion in respect to finance companies, investment trusts, and other enterprises whose operations are along essentially the same lines, for a similar situation exists.¹ There is an opportunity for those in charge of affairs to cover up errors for long periods by refusing to write off credit or investment losses. Nor is there any way by which the current financial data may be used to disclose this state of affairs.

The extent to which managerial ability is immediately reflected in the financial reports of a company will vary according to the nature of the enterprise. Regardless of the information here disclosed, however, it is often desirable to pursue an entirely independent inquiry as to the record and character of a concern's management. The record of its directors and officers in other capacities or in other enterprises is valuable information, where this is obtainable. In other cases, inquiry may be made through banks or other firms with which the concern under consideration does business, in an effort to get a satisfactory impression of its sponsors. On the other hand, where securities are sold through investment banking houses, much depends on the character of the originating house. The reputation and standing of the investment banker in such cases is, indeed, important. In fact it may be assumed, when a banking house brings out an issue, that it is

¹ For a more complete discussion of the securities of financial institutions see Chapters XX and XXI.

thoroughly familiar with the ability and the character of those who are to manage the business and is willing to stake its reputation on their success. In the case of subsidiary corporations, whose underlying securities are being studied, it may be assumed that the management of the operating company is no better than that of the parent company, for in such cases control of these underlying companies is usually absolute and the policies of the holding company are stamped on the operations of all of its subsidiaries.

Equities and business risk.—Another aspect of analysis to be considered is general in its nature and universal in its application. The entire question of the financial structure of corporations, the relationship that exists between the various corporate "equities" in respect to profits and assets, and the manner in which these equities are affected by business risk is referred to here. The reason for developing this subject at the present stage of the discussion is twofold. In the first place, the topic is of paramount interest to all investors in corporate securities; furthermore, it is sufficiently universal in its application to warrant general treatment rather than specific consideration, in connection with each of the various classes of enterprises that are subsequently to be studied.

The term "equities" will be used in subsequent pages of this book with a somewhat special meaning. It will be used to designate the ownership claim against the assets and earnings of a corporation which are attached to a specific security. For example, assume that a corporation has outstanding \$100,000 in common stock and \$100,000 in 6 per cent first mortgage bonds, while surplus is carried at \$50,000. What is the equity represented by these two classes of securities? The bonds obviously carry a first claim against the fixed assets of the company, but this claim is limited to \$100,000. The equity represented by the common stock, on the other hand, has a book value of \$150,000. If, now, the two equities are compared, there is found to be first a definite claim for \$100,000 secured by \$250,000 in book assets. The equity represented by the common stock is preceded by this definite claim of \$100,000, and amounts in all to \$150,000 in terms of book assets.

Trading on the equity defined.—We sometimes say that the common stockholder "trades on his equity" when he bor-

rows, as he has done in the present case.² By this we mean that he takes a greater risk than the creditor takes, but reserves the right to receive all profits over and above those which are necessary to pay charges on the borrowed money. It will be seen that in the previous case the stockholder has promised the bondholder, or creditor, a specific and definite return on his equity. At the same time the stockholder provides a sort of safety cushion, or buffer, for the bondholder, by having made his own investment in the business. This becomes obvious when it is recalled that the bondholder will not lose any principal until assets have shrunk to the point where the common stockholder's equity has been completely wiped out. The previous example may be used again for illustrative purposes. So long as earnings after operating expenses are equal to \$6,000 the bondholders are assured of their income. Likewise, so long as the assets have a market value of at least \$100,000, only 40 per cent of their book value, the principal of the bonds is secure. The amounts over and above these figures are not a matter of concern to the bondholder, except in so far as large earnings and assets add further security to his investment. It may be concluded that, other things being equal, the larger the equities following any given issue of bonds, the better the security behind the bonds. Conversely, the larger the bond issue in proportion to the amount of subsequent equities, the greater is the risk attached, not only to the bonds, but also to the junior securities which follow the bonds.

Profits accruing from trading on equity.—But while the risk is greater in the latter case, for both junior and senior securities, the opportunity for profits on the common stock are correspondingly increased. Therefore, it is a question of policy as to just how far the stockholders of a corporation may proceed with safety in borrowing money, or "trading on their equity" in an effort to enhance profits. We shall devote some attention to this problem in the present chapter, since it is one of the basic factors to be considered in the financial analysis of corporations. It involves, in other words, the whole question of financial structure.

² Credit for this phrase belongs to W. H. Lyon. See Lyon, W. H., "Capitalization," Chapter II, "Trading on the Equity," 1912, Houghton Mifflin Co., Boston.

In developing this topic it will be advisable first to show more clearly the opportunities for profit and the corresponding enhancement of risk which result from an extension of borrowing operations. This can be done by means of a simple illustration. Assume that the owners of a corporation are convinced that capital employed in the business can earn at the rate of 10 per cent per annum, and that a reasonable amount of capital can be obtained by issuing 6 per cent, first mortgage bonds. If the stockholders avail themselves of this opportunity to borrow the capital necessary for expansion purposes at 6 per cent, rather than by issuing additional common stock, it is apparent that they can increase their own return thereby. This may be adequately demonstrated by reducing the preceding assumptions to figures as is done in the two following examples:

EXAMPLE I

Present Capital	\$1,000,000
New Capital Secured by Issue of \$1,000,000 New Stock	1,000,000
Total Capital	<u>\$2,000,000</u>
10% on Capital Invested..	\$ 200,000
Rate of Return on Stock...	10%

EXAMPLE II

Present Capital	\$1,000,000
New Capital Secured by Issue of \$1,000,000 of 6% Bonds	<u>1,000,000</u>
Total Capital	<u>\$2,000,000</u>
10% on Capital Invested..	\$ 200,000
Less 6% on Bonds.....	<u>60,000</u>
Available for Stock.....	\$ 140,000
Rate of Return on Stock...	14%

In Example I, the owners of the business secured the funds necessary for expansion entirely by means of new common stock. It is true that total net profits were doubled, yet the number of shares among which such profits had to be divided was likewise doubled, so that the "per share" earnings remained the same. In Example II, however, additional capital was secured by issuing 6 per cent bonds. Although the interest on these bonds had to be paid before anything could be paid on the common stock, the total return required to be paid for the use of this capital was but 6 per cent. So long as such additional capital was capable of producing a total return of 10 per cent, the additional 4 per cent was available for the same number of shares of common as was originally outstanding, thus raising the return thereon to 14 per cent. The bond-

holder in such cases agrees to receive a smaller but a more certain return, and for this reason purchases a security based on a definite contract to pay a stated rate of interest.

Increase of risks by trading on equity.—In order to show next the inherent risks involved in this operation, the analysis may be carried one step farther. Assume that the directors, encouraged by the results of borrowing the first \$1,000,000, authorize a further issue of \$4,000,000 8 per cent debenture bonds. The set-up under normal conditions would then be as follows:

EXAMPLE III

Capital Stock	\$1,000,000
6% First Mortgage Bonds.....	1,000,000
8% Debenture Bonds.....	4,000,000
<hr/>	
Total Capital	\$6,000,000
10% on Capital Invested.....	600,000
Interest on 6% Bonds.....	60,000
Interest on 8% Bonds.....	320,000
<hr/>	
Available for Stock.....	\$ 220,000
<hr/>	
Rate of Return on Stock.....	22%

The essential point to consider, when borrowing operations are extended in this manner, is the relative certainty that earnings can be maintained at, or above, the assumed rate. For instance, a drop in earnings from 10 to 5 per cent on invested capital becomes a serious matter in the third example, as it would reduce earnings available for charges from \$600,000 to \$300,000, while the charges remain at \$380,000 regardless of earnings. In other words, the corporation, in this case, is actually faced with a deficit of \$80,000. In the second example, however, where borrowings were relatively small, a drop in the rate of earnings on invested capital to 5 per cent would still give \$100,000 available for charges of \$60,000. The result here is merely a reduction in the rate of earnings on common stock from 14 per cent to 4 per cent, while in the first case the same decrease in earning power would merely cause a corresponding drop in the rate of earnings on stock, since there was no borrowing.

If the time were taken to work out the necessary computations, it could be shown that an increase in the rate of earn-

ings on invested capital from, say, 10 to 12 per cent would have a much more favorable effect on the common stock earnings in Case III than in Case II, or in Case I. That is, so long as earnings continue at or above the assumed rate (it might even be said that so long as the earnings on borrowed capital exceed the rate of interest paid thereon), borrowing is profitable for the common stockholder.

Effect of business risk on capital structures.—Business risk may be defined for present purposes as the extent to which the gross earnings, operating ratios, and net earnings of a corporation fluctuate from year to year. These three factors are closely related and must all be considered in analyzing business risk.

“Gross revenues” is the term customarily applied to the gross income which the corporation receives each year from the sale of the products it manufactures or the services it renders. It includes only revenues from its normal business and not outside income, such as dividends or interest received on investments owned, or rentals from property leased to other concerns.³

“Operating expenses” consist of such items as wages, materials used in manufacturing, depreciation, cost of heat, light, and power, repairs, local taxes, and so on. These items must be paid for even before interest on the company’s funded debt is met. The amount left after such charges, which may be designated “net income available for charges,” or “total income,” is thus seen to be a function of gross earnings and operating expenses. This may be illustrated by the following very simple income account:⁴

ASSUMED INCOME ACCOUNT

Gross Earnings	\$1,000,000
Operating Expenses	800,000
Net Available for Charges.....	<u>\$ 200,000</u>

³ See Chapters XIII and XIV for full discussion of corporate income account.

⁴ In practice, the income account is more complicated. Income from outside sources, Federal taxes, depreciation, expenses not connected with operating the business, etc., are usually found treated in various ways. The analysis of income accounts will subsequently be considered in detail, at which time certain typical set-ups will be examined.

In this case the operating ratio, that is, the ratio of operating expenses to gross, is 80 per cent. If "gross" were to increase to \$1,500,000 and operating expenses were to increase proportionately, "net" would increase to \$300,000. Or, if our operating expenses were to increase to \$900,000 without any corresponding decrease or increase in gross earnings, "net" would be reduced to \$100,000.

On the other hand, assume that gross earnings decline to \$600,000 on account of bad business. Is it probable that operating expenses can be so adjusted that they will decline proportionately, that is, Can operating expenses be reduced to \$480,000 and operating ratios remain at 80 per cent? This is doubtful, for, in the case of a normal concern, a part of its operating expenses are more or less "constant" or "fixed." Superintendents' salaries, heating costs, and some items of depreciation cannot be proportionately reduced when gross earnings fall off. Therefore, a decline in gross frequently means an increase in operating ratios for many concerns. In the case at hand, if "gross" were to fall to \$600,000 it is probable that operating expenses could be decreased to a point no lower than \$550,000, in which case the operating ratio of the company would jump to 92 per cent. The extent to which this tendency obtains, however, will vary with different corporations, depending on the nature of the business and the amount of fixed capital employed therein. In any event, the result of this situation is that the net earnings of normal concerns decline much more rapidly than do gross earnings and operating ratios tend to increase during periods of depression.

Furthermore, in competitive industries, a price war may seriously reduce gross revenues, yet the volume of business handled does not decline and may even increase. Under such conditions, it is usually impossible substantially to reduce operating ratios and they may even increase unless a much more efficient operating program is adopted. In such industries, therefore, a decline in gross, particularly if caused by a lowering of prices due to severe competition, will usually be accompanied by a rapid rise in operating ratios. This situation exists to-day (1928) in the woolen and worsted industry and is largely responsible for the serious financial condition of many of our larger woolen and worsted mills.

From the preceding discussion it is apparent that concerns

with widely fluctuating gross earnings, that is, whose sales fluctuate widely from year to year, will generally have a widely fluctuating net income available for distribution to the various equities found in the capital structure. Furthermore, those concerns whose operating expenses are the least flexible, or the least capable of being reduced when sales fall off, are in the worst position. It also follows that those concerns with the highest operating ratios during periods of normal operations are liable to be the first to show operating losses when sales slump. A concern whose operating ratio is normally 90 per cent requires 90 cents out of every dollar of sales to meet operating costs, leaving only 10 cents for all other charges and profits. A concern whose operating ratio is normally 80 per cent has a wider margin of safety and can suffer a proportionately heavier slump in sales, or rise in operating costs, before reaching the danger point, other factors being equal.

When we discussed "trading on the equity," we brought out the advantages and risks of borrowing capital. The risks, of course, are greatly magnified if earnings are unstable. Instability in earnings is caused by fluctuating gross earnings, and fluctuating, or high, operating ratios.

It is apparent that, if no business risk were present, that is, if earnings could be predicted with absolute accuracy, and did not fluctuate from year to year, borrowing operations could be expanded indefinitely. On the other hand, where earnings are highly erratic, and cannot be predicted with any accuracy, the existence of the fixed charges which accompany borrowing operations creates a real danger. Accordingly, the general conclusion may be drawn that, logically, bonds may make up a large portion of total capitalization in those industries and enterprises with low business risk, but must be used more sparingly in industries and enterprises with high risk.

Business risk, in typical industries: public utilities.—Business risk as previously defined is decidedly lower among certain of the so-called public utility companies than among concerns classified as industrials. This statement applies particularly to electric light and power, water, gas companies, and telephone and telegraph companies. The same may be said of railroad companies. On the other hand, traction companies are somewhat less favorably situated, partly on account of competition offered by the growing use of automobiles.

Up to a certain degree the services of such industries must be consumed quite irrespective of business conditions. There is very little risk from style changes. Competition is minimized by the very nature of the enterprise in the public utility field, where the economic law of increasing returns operates and where the duplication of facilities seldom occurs. Finally, the existence of commission control over rates and services is a stabilizing factor.

The effect of this situation is clearly illustrated by a study of gross income, operating ratios, and income available for charges of the American Telephone & Telegraph Company for the years 1920 to 1926 inclusive.

GROSS INCOME, INCOME AVAILABLE FOR CHARGES, AND
OPERATING RATIOS

(Amer. Tel. & Tel. Co. and Subsidiaries, 1920 to 1925, inclusive)*

—IN MILLIONS OF DOLLARS—						
	1920	1921	1922	1923	1924	1925
Gross Earnings	449.4	487.1	546.8	601.6	657.6	741.3
Total Income †	85.3	110.7	131.4	150.0	156.7	190.8
Operating Ratio	81.0	77.3	76.0	75.1	76.2	74.3

PER CENT CHANGE OVER PREVIOUS YEAR

	1921	1922	1923	1924	1925	1926
Gross.....	+8.3	+12.3	+10.0	+9.3	+12.7	+11.0
Total Income.....	+29.5	+18.7	+14.1	+4.5	+21.7	+12.5
Operating Ratio.....	-4.6	-1.7	-1.2	+1.5	-2.5	-0.5

* Based on consolidated income account.

† Available for charges.

It will be noted that fluctuations in gross income here are at a minimum and, for the period studied, consist almost entirely of the normal increase in business naturally arising from increased population and industrial development. In fact, the annual increment of increase is remarkably regular. Furthermore, operating ratios vary only within a narrow range, declining slightly during the period on account of the fall in prices that occurred between 1920 and 1925.

At the close of the year 1926 the funded debt of the American Telephone & Telegraph Company amounted to \$385,190,400, while capital and surplus amounted to \$1,301,792,-

581. The ratio of debt to stockholders' equity here is approximately 1 to 3.38. As will be shown presently, this ratio is substantially lower than that found in many companies commonly classed as utilities. In fact, it is lower than is found in other telephone companies, for, in 1922, the ratio for all companies outside the Bell system was 1 to 2.⁵

In the electric light and power and gas industry relatively low business risk is likewise found. This is clearly brought out by a study of the net income of typical companies during the past eight years.

COMPARISON OF TREND OF EARNINGS OF SELECTED PUBLIC UTILITY CORPORATIONS

(Net earnings, in \$1,000's, 1920 to 1926, inclusive)

<i>Year</i>	<i>Consolidated Gas & Elec. Light, Baltimore</i>	<i>Detroit Edison</i>	<i>Brooklyn Edison</i>	<i>Common- wealth Edison</i>
1920	4,982 *	4,534	3,083	7,232
1921	6,028	6,283	4,825	8,201
1922	8,924	7,170	6,229	9,325
1923	9,633	9,360	7,671	10,604
1924	8,648	10,265	9,192	13,203
1925	9,975	12,610	9,880	15,311
1926	9,676	13,994	11,584	17,656

* Available for charges.

The low business risk found in the case of electric light and power companies is accompanied by a relatively high ratio of debt to ownership equity. In the case of commercial central electric stations, for instance, funded debt for 3,774 stations amounted to \$2,248,746,000, in 1922, while combined capital stock and surplus was carried at \$2,385,183,000.⁶ The ratio here was 1:1.06. That is to say, on the average, the stockholders in these companies had borrowed approximately one dollar for every dollar that they had in the business. As a matter of fact, one frequently finds companies in this field with a funded debt considerably in excess of ownership investment.

⁵ "U. S. Statistical Abstract," 1926, p. 349. Total funded debt for all companies with annual incomes above \$10,000 was \$91,165,000, while capital and surplus amounted to \$182,417,000.

⁶ "U. S. Statistical Abstract," 1926, p. 358.

This is particularly true of the larger holding companies which have played so important a part in recent utility financing. The real reason for this situation goes back to the advantages accruing to the stockholders, or owners, of the enterprise from trading on a thin equity, where business risk is relatively low and where earnings on invested capital may be expected to exceed the rate paid on borrowed capital.

Business risk in railroads.—In the case of the railroad industry of this country we likewise find a relatively low business risk. Transportation is vitally necessary to the nation, the entire industry is strictly regulated, and operates, to some extent, although not entirely, under monopoly conditions. As to the relative amount of business risk in railroad companies as compared with public utility enterprises some question may arise. Both are dependent on general financial conditions for the amount of their gross business, although there may be a somewhat closer connection in the case of our railroads. Furthermore, operating ratios are somewhat less flexible in the case of railroads, since they cannot be so easily reduced as in the case of some utilities. This is particularly true on account of the control which the Interstate Commerce Commission has over rates and the reluctance on the part of the Commission to adjust rates upward during periods of rising prices and rising operating costs.

Recent statistics of railroad operation.—A study of the recent statistics of railroad operation brings out clearly the inability of a regulated industry immediately to meet changed economic conditions. The effect of rising prices from 1913 to 1920 was to reduce the earnings of our railroads and to increase operating ratios. This tendency, especially pronounced after the War, was accentuated by the unwillingness of the Interstate Commerce Commission to grant rate increases sufficient to offset rising costs. Since 1920, however, there has been a rapid reduction in operating ratios, due largely to rate increases, a lowering of general prices, and economies effected by the roads after their return to private operation in 1920. The table on the following page shows the reduction very conclusively.

In 1924, funded debt constituted 62.6 per cent of total net capitalization of all roads reporting to the Interstate Com-

OPERATING REVENUES, OPERATING INCOME, OPERATING RATIOS

(Class I * Railroads, 1920 to 1926, inclusive, in Millions)

	1920	1921	1922	1923
Operating Revenues.....	\$6,178	\$5,517	\$5,559	\$6,289
Operating Income (net).....	\$17	\$601	\$760	\$962
Operating Ratio.....	94.3%	82.7%	79.5%	77.8%
Per Cent Change in Operating Revenues Over Previous Year.....	+20%	-10.7%	+7%	+13.0%
Per Cent Change in Operating Income Over Previous Year.....	-96.2%	+3435.29%	+26.3%	+26.6%

	1924	1925	1926
Operating Revenues.....	\$5,921	\$6,123	\$6,383
Operating Income (net).....	\$974	1,121	1,213
Operating Ratio.....	76.1%	74.1%	73.1%
Per Cent Change in Operating Revenues Over Previous Year.....	-5.8%	+3.4%	+4.2%
Per Cent Change in Operating Income Over Previous Year.....	+1.2%	+15.0%	+8.0%

* Class I refers to roads with annual operating revenues in excess of \$1,000,000.—*Commercial and Financial Chronicle*, "Railway and Industrial Compendium," November, 1927, p. 5.

merce Commission.⁷ This compares with a figure of 54.5 per cent in 1890. It is doubtful, however, that this increase was entirely voluntary. A study of the railway problem from 1900 to 1920 shows that increasing regulation, especially in respect to rates, reduced profits and made the railroad industry a less attractive field for stock investment.⁸ In seeking additional capital for expansion purposes during this period our railroads undoubtedly were forced, in many instances, to issue bonds rather than preferred or common stocks.

Industrial companies, so-called; reasons for high business risk.—Among so-called industrial companies one finds the widest fluctuations in earnings and the highest business risk. It is true that there are certain types of industrial companies which enjoy relatively stable earnings, but the existence of such companies does not destroy the validity of the general observation. The reasons for this situation are not very hard to find.

Competition.—In the first place, industrial companies are

⁷ "U. S. Statistical Abstract," 1925, p. 378.

⁸ See Chapters XVIII and XIX.

usually subject to severe competition, except in those relatively few instances where some form of legal monopoly, such as a patent monopoly, or control of raw material, exists. There are, in fact, several types of competition to which industrial companies are subject. First is the ordinary competition reflected in the markets where the concern sells its output. Another type of competition comes from the continual growth of new concerns equipped with the newest and most modern machinery. Such companies for a time enjoy lower costs than their competitors, with the result that older concerns are often required to scrap their equipment long before its real life is spent in order to escape the handicap of high costs. This kind of depreciation is called obsolescence. Finally, must be considered the competition of one commodity with another. It is a general complaint among clothing manufacturers that the automobile has diverted purchasing power, which otherwise would have been used for their products. The displacement of the bicycle and carriage industry by the automobile is now a matter of history, while the substitution of silk and artificial silk for cotton is so recent a phenomenon as to require but little comment.

Instability of demand and changes in styles and tastes.—Another reason why industrial earnings fluctuate widely is the constant shifting which takes place in the public's demand for goods and services, and style changes. Particularly in the textile industries are style changes of the utmost importance. Several years ago a visit of the Prince of Wales to this country stimulated the sale of blue shirtings to such an extent that the earnings of several large mills which specialize in the manufacture of shirtings were seriously affected, because they had a large stock of standard patterns which failed to move. The growing demand for combination shirts and collars during 1926 and 1927 was given as the reason for a decline in earnings of one of our large collar manufacturing concerns. In the automobile field one is constantly witnessing changes in designs and models that react to the advantage of some companies and to the detriment of others. In short, it is necessary for all companies which produce goods for the ultimate consumer to keep in constant touch with the consumers' tastes and to anticipate the latest developments in order to maintain their position in the field.

Industrial earnings, how affected by business conditions.—The constant fluctuations that occur in business conditions, accompanied by rising and falling prosperity, also cause industrial earnings to vary from year to year. During periods of prosperity the purchasing power of the community is high, demand is large, and profits are high. Rising prices are likewise favorable to most manufacturing concerns. During periods of depression demand falls off, prices decline, and the earnings of many concerns are seriously reduced. Companies engaged in the manufacture of luxuries, or of articles that can be dispensed with, naturally will be the hardest hit during such times, while concerns that manufacture low-priced necessities may not be so seriously affected. Industrial profits as a whole, however, follow the trend of business conditions very closely.

The effect of price fluctuations on inventory values is another factor that often affects the profits of industrial companies. A rapid fall in prices, such as occurred in 1920 and 1921, is a very serious factor to a concern that carries an average inventory equal to 50 per cent of its gross sales. Not only does such a fall in price cause earnings to fall, but it weakens the concern's liquid position and frequently requires temporary or permanent borrowing.

Low business risk.—While so-called industrial corporations as a class are subject to high business risks there are exceptions. Companies that enjoy a monopoly in their field, either because they control patent rights or sources of raw materials, occupy a strategic position and may enjoy a relatively low business risk. The Eastman Kodak Company controls basic patent rights on photographic equipment as well as the trade-mark "kodak." The Aluminum Company of America controls 90 per cent of the supply of aluminum in this country, while the Texas Gulf Sulphur Company controls the only known large sulphur mines in the world. By virtue of such monopoly these companies enjoy a relatively low business risk.

Low priced necessities.—Industrials manufacturing low priced commodities which are necessities of life likewise enjoy a stable demand for their products. Where such a situation obtains, the unit of expenditure for the article is small, the proportion of the consumer's total income used in the purchase of such articles is small, and sales, therefore, remain constant irrespective of business conditions. The Gillette Safety Razor,

the Diamond Match, Postum Cereal, and Liggett Myers belong to this class, as shown in the following table:

GROSS OR NET EARNINGS OF SELECTED INDUSTRIALS

(1919-1926, inclusive, 000 omitted)

<i>Year</i>	<i>Gillette</i>	<i>Diamond Match</i>	<i>Postum Cereal</i>	<i>R. J. Reynolds</i>	<i>Liggett & Myers</i>
1919.....	\$6,025*	\$2,174*	\$21,046	11,273*	\$8,917*
1920.....	6,803	2,147	21,910	10,691	10,573
1921.....	7,009	1,671	17,774	16,258	12,651
1922.....	7,603	1,699	17,877	20,479	11,484
1923.....	8,412	1,702	22,205	23,040	11,376
1924.....	10,122	1,695	24,248	23,778	13,714
1925.....	12,090	1,606	27,388	25,222	17,028
1926.....	13,311	1,602	46,896	26,249	19,373

* Net (gross not available).

Chain store companies.—The better managed chain store companies have likewise been singularly free from business risk during the past decade. These companies sell standardized articles, on which the unit of expenditure is small. They operate over a wide territory and hence avoid the dangers of local depressions. Many of the articles they sell are necessities which are sold at a substantially lower price than similar articles in unit stores. For this reason, the larger chain store companies have shown a steady growth and a smooth upward trend of earnings quite irrespective of business conditions. The following table, showing net earnings of the Woolworth and the S. S. Kresge Company, 1919 to 1926, inclusive, will illustrate this tendency.

NET EARNINGS SELECTED CHAIN STORE COMPANIES

(1919-1926, Inclusive, 000 omitted)

<i>Year</i>	<i>Woolworth Co.</i>	<i>S. S. Kresge Co.</i>
1919	\$9,429	\$2,280
1920	9,775	2,754
1921	13,793	3,401
1922	18,324	6,615
1923	20,698	9,493
1924	20,669	10,114
1925	24,602	11,809
1926	28,205	12,504

Whatever may be said regarding exceptions of this nature, it is a well recognized principle among investors that industrial

companies *as a class* are characterized by high business risk. This is the basis on which most investment bankers operate, with the result that the average ratio of bonded debt to ownership equity is lower among industrial companies as a group than among either public utilities or railroads. In a recent study covering 57 industrial corporations for the year 1918, with aggregate assets of \$4,641,000,000, the total funded debt amounted to \$500,000,000 while stock equity amounted to \$3,091,000,000. The ratio here was approximately 1 to 6. Similar data for a group of 402 industrials, with combined assets of \$6,114,000,000, showed funded debt of \$465,000,000 and capital and surplus of \$4,664,000,000. The ratio here was thus about one to ten.⁹ These figures are significant, even though a wide variety of businesses are classified under the heading "industrials," and they bear out the generally accepted principle that borrowing operations should be guided by the extent to which business risk exists.

Summary.—In the present chapter certain factors of general importance have been considered. Management is one of these. The capital structure of the corporation is also of primary concern, for here is reflected the financial relationship existing between different groups of investors. Capital structure, however, is closely related to the risk present in the industry. By way of suggestion, the risk elements present in the three major groups of privately owned companies were analyzed briefly. The investor, however, should be in a position to carry this investigation much farther and to discriminate within these groups. It should be a cardinal rule, in purchasing securities, to insist that the capital structure of the corporation be in keeping with the inherent risks present.

⁹ Lincoln, E. E., "Applied Business Finance," p. 354, 1923, A. W. Shaw Co., Chicago.

CHAPTER XIII

FINANCIAL ANALYSIS—INDUSTRIALS

Industrial securities.—Among investors the term “industrial securities” is used in a very broad sense. Quite illogically it is often applied to the securities of practically all private enterprises except those which may be definitely classified as public utilities, railroads, real estate, banks, insurance, or investment trusts. In a way, it is unfortunate that the term should be used in so general a fashion for, after all, there is little in common among such diverse enterprises as copper mining, oil producing, automobile manufacturing, and chain store merchandising.

In developing methods of analysis that are applicable to railroad securities, one finds his problem simplified by the fact that he is dealing with corporations whose fundamental operations are, to a certain extent, similar, in spite of the different geographical, economic, and climatic conditions in various parts of the country. The same may be said of electric light and power companies, traction companies, banks, insurance companies, and so on. In determining methods of analysis which are adaptable to industrial securities a somewhat different situation exists. Although it is possible to single out certain characteristics common to many different lines of activity it is nevertheless desirable to work out for each industry certain refinements that take into account factors which are germane to the industry under consideration.

For example, in analyzing textile securities, many statistics can be reduced to a “per spindle” basis. In considering sugar securities the “per bag” basis may serve as a common denominator, while, in analyzing the securities of oil companies, as much depends on giving proper consideration to the reserves of the company as to current operating data.

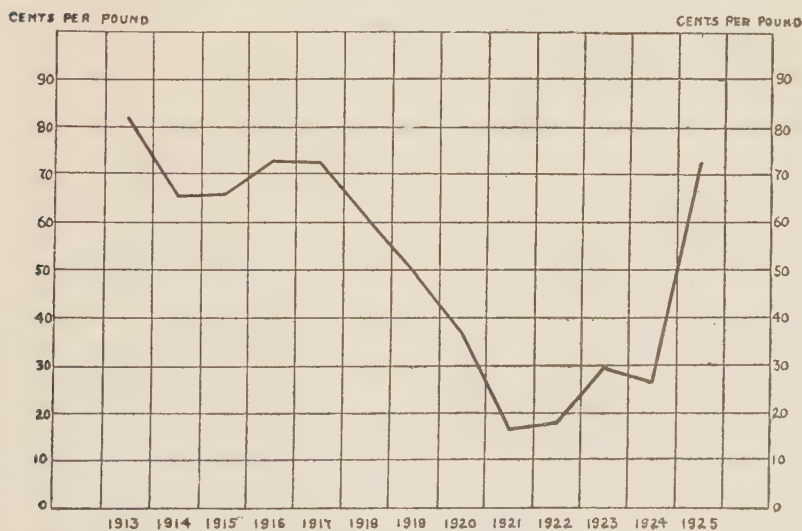
With this in mind a plan of investigation has been developed that provides first for a *general survey* of the industry in which the enterprise itself is engaged. Having indicated some of the pertinent factors to be studied in determining the invest-

ment outlook of the entire industry, general methods are taken up by which the *concern itself* may be analyzed and its position in the industry determined. This is done by first considering a series of financial ratios that apply generally to industrial concerns and subsequently by showing how specific lines of inquiry may be adapted to particular industries.

General survey of industry: sources of raw material.—

One of the first matters to be considered in a general survey relates to the sources of raw material which the concern uses, the markets in which these are purchased, and the probable variations in raw material prices over a period of years. Where a concern is integrated, that is, where the same corporation produces both the raw materials and the finished products, as does the United States Steel Corporation, this aspect of business risk is minimized. Quite the opposite situation exists in the case of our large tire companies, however, for here the bulk of their raw material, that is, crude rubber, comes from the Far East and is raised in British territory. One of the serious elements of risk present in the tire industry arises from the wide fluctuations that occur in crude rubber prices from year to year. Some idea of the range over which rubber prices have varied during the period 1913 to 1925, inclusive, may be had from the following chart:

Fig. 12.—Fluctuations in Crude Rubber Prices 1913–1925 Inclusive: Average of Weekly Prices (Cents Per Pound) of Ribbed Smoked Sheets Spot, New York.



The actual monthly fluctuations in rubber prices were even more violent during a substantial portion of the period covered than is indicated by the curve of annual average prices. The following table gives the high and the low range for each year from 1920 on:

MONTHLY AVERAGE PRICES—SPOT—NEW YORK *

(In cents per Pound)

<i>Year</i>	<i>High</i>	<i>Low</i>
1920	55.0	17.5
1921	20.0	12.8
1922	27.5	14.2
1923	35.5	26.0
1924	38.1	18.9
1925	104.8	35.6

* "Annual Statistical Bulletin," 1926, Standard Statistics Service, p. 71.

In 1922 the so-called Stevenson plan, under which the production and export of rubber in the British Colonies is rigidly controlled, was put into effect in the British East Indies, with the idea of enhancing prices. This area produces 70 per cent of the world's supply of crude rubber and the United States consumes approximately 70 per cent of the world's output. The restrictions proposed in the Stevenson plan were designed primarily to give the British producer a fair price for his rubber. The immediate result was a sharp rise in rubber to a high of 104.8 cents per pound in 1925. It can scarcely be said that the plan has as yet produced greater stability in rubber prices, however, for, since it became effective, wide fluctuations in prices have been the rule and not the exception. As late as 1926 there was in fact a spread of over 100 per cent between the low and the high monthly average prices. (The Stevenson plan has been discontinued since this book went to press.)

It is difficult to picture the hazards arising from such rapid and erratic fluctuations in raw material prices without first picturing the amount of inventories which a typical tire company is required to carry. The B. F. Goodrich Company, for instance, produced gross sales during the year 1926 of \$148,391,478. Its inventories at the year end were carried at \$28,494,693. In 1920 inventories were carried at \$72,631,000 against sales of about \$150,000,000. It would perhaps

be more accurate to compare the average inventory carried during the year with the sales for the year. If this is done for the period 1920 to 1926, inclusive, it would appear that every dollar of average inventory carried produced the following number of dollars in sales:

INVENTORIES AND SALES—B. F. GOODRICH CO.

(1921 to 1926)

<i>Year</i>	<i>Average Inventory *</i> (in \$100,000)	<i>Sales</i> (in \$100,000)	<i>Sales per \$ Inventory</i>
1921	51.1	86.7	1.7
1922	26.3	93.6	3.5
1923	23.6	107.0	4.5
1924	22.2	109.8	4.9
1925	30.8	136.2	4.4
1926	35.0	148.4	4.2

* Average between inventory at beginning of period and end of period.

A loss of 25 per cent on its average inventories during any of the years referred to would have been a serious matter to this company and might easily have created a current deficit in operating results. It is true that opportunities for large profits are created during periods of rising prices, yet it is far better policy for manufacturing corporations to avoid, if possible, all chance of loss or gain from fluctuations in commodity prices and to seek so far as possible only a normal manufacturing profit.

Labor conditions and business risks.—The question of labor conditions likewise presents an element of risk in industrial companies. The production of bituminous coal is so organized at present that a serious labor problem is created. Somewhat less than half the coal of this country is normally produced in union mines. Nonunion mines are able, however, to step up production so that approximately 70 per cent of our total needs can be met from this source. Admittedly the total potential output of bituminous coal, union and nonunion, is in excess of our current requirements. In the union fields miners do not work on full time, otherwise more coal would be produced than is needed. Nonunion coal can be produced at a somewhat lower price than can union coal, on account of the higher wage level in the union districts. Union leaders, on the other hand, insist on the maintenance of high wages. The

industry is characterized by constant jockeying on the part of union leaders and by frequent strikes. Therefore, the purchase of the securities of coal companies operating in the union districts is subject to all the risks occasioned by the preceding circumstances.

Markets.—A study should also be made of the market for the products of the concern under consideration. The location and the extent of the market and the nature of the demand are important. Is the product a necessity or a luxury? How will sales hold up during periods of depression? What competition must be met? Are sales of the so-called repeat sort, or is a customer once sold out of the market? The salvation of the Gillette Safety Razor Company lies in the fact that there is a market for over 50,000,000 dozen of its blades annually. Another factor of importance is diversity of outlets. Concerns which sell through many retail outlets and which have a consumer demand for their products are in a better position than are concerns which sell under jobbers' brands to a few large outlets.

Organization within the industry.—Still another matter that should be given serious thought in purchasing industrial securities is the condition of the industry. Is there room for future expansion or has the industry reached the acme of its growth? There is little or no opportunity to-day for expansion in the cotton or woolen textile industries. The automatic signal and train control field, on the other hand, apparently, is in a position to go on for some time and to expand rapidly, for only a relatively small portion of the entire mileage of the country is at present (1928) equipped with automatic train control devices.

The organization found within the industry is also important. In the cotton textile field there are many small independent mills competing for business. There are also two distinct producing areas—New England and the South. In the former locality many mills are characterized by old-fashioned management and obsolete equipment. Costs of production are also high, yet these mills have a low original investment cost and hence low carrying charges. The development of new mills in the South on a rapid scale has so increased the number of spindles in operation and output that there is insufficient busi-

ness to keep all plants operating at a profitable capacity. The failure of high cost producing mills is not an immediate remedy for the situation, for such mills, unless liquidated and dismantled, still operate so long as they can meet so-called "out of pocket" expenses. Under such conditions, they actually become more dangerous competitors, at least so far as trade stabilization is concerned, than do new mills with normally low production costs. Compare the textile situation with that found in the electric equipment field, where there are only two competing concerns of any size, operating under an agreement where all patent rights are pooled. Competition, while existing, to be sure, is minimized, and an equitable division of business occurs at prices which provide a reasonable profit for both concerns.

The tariff and investments.—The relation of various industries to our tariff laws should also be studied carefully by investors. While many aspects of the tariff are subject to argument, there are certainly some industries which would be seriously affected, at least in part, by a change in the tariff laws. Many feel that a heavy tariff on cotton and woolen goods is an absolute necessity if the industries are to be maintained at all in this country. If this is so, certainly the tariff raises the prices of the products of these industries to the consumer. The farmers who constitute a large group of consumers, however, profit little, if any, from a tariff on agricultural products, for the price of wheat and many other agricultural products is determined in the world markets. This statement is entirely correct, at least so far as those products of which we have an exportable surplus are concerned. This being the case, the farmer suffers a distinct loss from a tariff on textiles. Thus, he is required to pay more for the clothes he wears, while foreign purchasing power for his own products is curtailed by preventing foreigners from selling in our markets. The application of all this to investments may seem obscure, yet it might conceivably present a real and serious problem to investors in textile stocks, if the agricultural voters of the country some day exerted sufficient political power to bring about a reduction in the tariff on textiles.

Analysis of individual concerns: importance of financial statements.—After the investor has given sufficient thought to

these general factors which have an important bearing on the investment problem, he may logically turn his attention to the particular enterprise itself. In studying the risks of a single enterprise, interest centers on two essential points: the position of the company in the industry; and the conditions within the business itself. In this connection, contact is at once essential with the financial records which are customarily used to present the actual condition of the company from time to time, as well as to summarize its operating results during the periods that intervene.

The two most important financial records that are available to the investor for purposes of financial analysis are the balance sheets and the income accounts of a corporation. These records are so important and are so generally used by investors in appraising the financial condition of businesses and the financial risks attached to their securities that a thorough understanding of them is necessary to the student of investments. For the benefit of those who are not familiar with accounting methods a brief explanation of the nature of these two sets of accounts follows.

Balance sheet defined.—The balance sheet may be said to show a cross section of the financial condition of a concern (or individual) at a given instant of time. It is a statement of assets, liabilities, and proprietorship interest, and may be interpreted as an equation: $\text{Assets} = \text{Liabilities} + \text{Proprietorship Interest}$. On the asset, or debit, side of the balance sheet is a list of all the assets of the corporation; on the liability, or credit, side is indicated the various equities in these assets. That which does not belong to creditors belongs to the owners of the business. Thus do we find two distinct types of accounts on the liability side of the balance sheet: those representing amounts owed to outsiders, and those representing amounts owed to the owners, so to speak.

We have a somewhat different situation, however, when the corporation suffers losses sufficient to reduce or to impair the original capital; that is, when assets are less than liabilities plus original capital, a deficit occurs. This deficit appears as a negative item on the liability side, but becomes a positive item if transferred to the asset side of the equation; that is, $\text{Assets} = \text{Liabilities} + \text{Capital (proprietorship)} - \text{Deficit (proprietorship)}$; or $\text{Assets} + \text{Deficit} = \text{Capital} + \text{Liabilities}$.

A "deficit" is not a real asset, however, but is really an offset to capital.

Analysis of proprietorship accounts.—These very elementary concepts will now be illustrated by hypothetical balance sheets. Let us first assume that the financial affairs of corporation *A* stood as follows at the close of business December 31, 1927:

<i>Assets</i>		<i>Liabilities</i>	
Land and Buildings	\$1,000,000	Capital Stock	\$1,000,000
Machinery and Equipment.	500,000	Bonds 6%	500,000
Inventories	600,000	Accounts Payable	400,000
Accounts Receivable	600,000	Notes Payable	200,000
Cash	300,000	Profit and Loss Surplus....	900,000
	<hr/>		<hr/>
	\$3,000,000		\$3,000,000

If this company had been liquidated on December 31, and if the assets had all brought their book values, the \$3,000,000 of assets would have been distributed as follows: \$500,000 to the bondholders, \$600,000 to note holders and creditors, and \$1,900,000 to the stockholders.

Suppose, on the other hand, that the company suffered severe losses during 1927 and that the balance sheet showed the following situation on December 31, rather than the more prosperous one previously suggested:

<i>Assets</i>		<i>Liabilities</i>	
Land and Buildings	\$1,000,000	Capital Stock	\$1,000,000
Machinery and Equipment.	500,000	Bonds 6%	500,000
Inventories	300,000	Accounts Payable	900,000
Accounts Receivable	200,000	Notes Payable	500,000
Cash	100,000		
Profit and Loss Deficit....	800,000		
	<hr/>		<hr/>
	\$2,900,000		\$2,900,000

Should assets now be liquidated at their book values the total receipts would not be \$2,900,000, but \$2,100,000. This would be distributed as follows: "\$500,000 to the bondholders, \$900,000 to the creditors, \$500,000 to the note-holders, and the remaining \$200,000 to the stockholders. The profit and loss deficit here is thus an offset to capital and is not an asset in the true sense of the word. That is to say,

the real book value of the capital account is \$200,000, and not \$1,000,000 as it appears at first glance. The asset, "profit and loss deficit," which has been designated an "offset" account, must first be deducted. Its appearance on the asset side as a positive item, or on the liability side as a negative item, is necessary to make the books balance.

It is possible, of course, that the deficit might be in excess of the amount of capital stock outstanding. In cases where this occurs the corporation is said to be "insolvent." That is, the corporation has not enough assets to meet its actual obligations to outside creditors. A situation such as this may occur before it is shown on the books of the company. Reverting to the balance sheet on page 289, one observes that land and buildings are carried at \$1,000,000. Assume now that this item is overvalued on the books of the company and is really worth only \$700,000. A proper revaluation of these assets would increase the profit and loss deficit to \$1,100,000 and the corporation would become insolvent. A similar loss might be incurred in respect to any of the other asset items with the same results.

Lack of standardization.—For illustrative purposes a very simple balance sheet was constructed. In practice the balance sheet may be presented in a much more complicated form and thus present a real problem of analysis. Furthermore, there is an utter lack of standardization in industrial accounting that makes the analyst's task at times very difficult. Take, for example, the variety of ways in which depreciation may be handled. Some concerns do not charge any depreciation, but rely on maintenance to offset the normal wear and tear on fixed assets. Other concerns charge income for a fixed annual amount, determined by the value of the assets and the rate at which they are expected to depreciate, and write down these assets each year by an amount equal to the estimated depreciation. When this is done the assets may be carried at their depreciated figure in the balance sheet or at their original value, with the depreciation reserve appearing directly underneath the original value, while the amount extended is the depreciated value. This may be illustrated by reference to the balance sheet appearing on page 289. Let us assume that the machinery and equipment account which is here carried at \$500,000 has a value before depreciation of \$600,000. This

item might be carried at \$500,000, as is done, with no reference to depreciation, or it might be carried as follows:

Machinery and Equipment.....	\$600,000
Less Depreciation	100,000
	<hr/>
	\$500,000

A still further method for handling depreciation is to set it up as a liability under the heading "reserves for depreciation." Had this been done in the preceding case "machinery and equipment" would have been carried at \$600,000 on the asset side of the balance sheet and among the liabilities there would have appeared an item, "reserves for depreciation on machinery and equipment," amounting to \$100,000. The entries then would have been as follows:

<i>Assets</i>	<i>Liabilities</i>
Machinery and Equipment.. \$600,000	Reserves for Depreciation on Machinery and Equipment \$100,000

It is important for the investor to differentiate between so-called offset reserves of this nature and real proprietorship reserves. Offset reserves are items that appear on the opposite side of the balance sheet from which the account to which they are related appears. Reserves for inventory reduction, depreciation, and doubtful accounts are all examples of offset items. The simplest way in which to dispose of such accounts is to reconstruct the balance sheet and eliminate them entirely. When this is done it is necessary to deduct the amount indicated from the corresponding item on the other side of the balance sheet.

When the corporation sets up special reserves that cannot be definitely interpreted, a more difficult problem is created. Suppose that a reserve is set up for "pensions and retirements." Is this a true proprietorship item or not? The answer depends, of course, on the extent to which the amounts charged thereto represent real liabilities. If properly set up, and not exaggerated, the assumption is that sooner or later an equal amount must be paid out as losses. The same may be said of other special "contingent" reserves set up against possible inventory losses, or fire losses, where the corporation operates its own insurance funds, and so forth. On the other

hand, corporations sometimes use such accounts to hide earnings.

"Reserves for additions and betterments" generally represent true proprietorship reserves, while "special reserves" may or may not represent a proprietorship account. In cases where corporations are involved in lawsuits or patent disputes, they sometimes set up reserves to cover anticipated losses. Conservative practice warrants that such accounts be questioned, unless explained in the reports of the company.

The presence of a relatively large item representing "good will" or other intangibles requires special treatment by the analyst. Pending further discussion, it is recommended that such items be eliminated entirely from the balance sheet and that an equal amount be deducted from surplus. This should not be taken to imply that good will never has a value, for, as will be seen, it may have a real value. The purpose in eliminating intangibles from the balance sheet is purely to facilitate the statistical comparisons that are to be suggested.

Deferred and prepaid items also require interpretation. In the customary operation of corporate affairs, it becomes necessary from time to time to pay in advance for certain services. Frequently, insurance is paid for several years in advance. In other instances, work may be undertaken in opening up new markets and the expenses incurred carried as an asset until profits materialize. In other cases, extraordinary losses may be set up as a deferred or suspense account and gradually charged against earnings. As a rule, however, deferred items are proportionately small and may be regarded simply as current assets. At least this treatment is recommended, where they are not large and where "accruals" are included under current liabilities.

Income account defined.—The income account, as contrasted to the balance sheet, shows the operating results of a corporation over a period of time, usually a year. It is from the income account that it is possible to analyze in more detail the changes that occur in the various accounts as between two consecutive balance sheets. Practice varies in respect to the form in which the income account is set up, but in the case of manufacturing concerns the following example illustrates in a general way the customary method of presenting this information. The same procedure will be followed in explaining

the income account as in explaining the balance sheet. First a simple form of income account, covering the operation of our assumed corporation for the year ended December 31, 1928, will be considered. (See page 295 for balance sheet.)

INCOME ACCOUNT—YEAR ENDED DECEMBER 31, 1928

Gross Sales	\$1,000,000
Operating Expenses	800,000
Operating Income	\$200,000
Income from Other Sources.....	20,000
Total Income	\$220,000
Fixed Charges	30,000
U. S. Taxes	20,000
Net Earnings	\$170,000
Dividends on Stock	100,000
Profit and Loss	\$ 70,000

It is also true that there is a lack of standardization among accountants as to the way in which the income account is set up. The simple example suggested here illustrates the main groupings necessary to a proper analysis of the financial affairs of the corporation. The first item which appears is "Gross Sales." This may be labeled "Total Revenues," "Sales Billed," or "Sales," but should include only the gross amounts received from the normal operations of the business, after returns and allowances have been deducted. "Operating Expenses" include expenditures made in the operation of the business, but do not include fixed charges. Among the more common items found under operating expenses are costs of material, labor, superintendents' salaries, heat, light, and power, depreciation on buildings, machinery and equipment, tool expense, and maintenance of plant and equipment. The amount left after the payment of such expenses may be called operating income. To this is generally added income not derived from the business. Such income may include interest received from outside investments, rentals on leased properties, and the like. If there are other expenses incurred that are not in the nature of fixed charges or operating expenses they may be deducted at this point. Among such charges may be included the cost of maintaining leased property, special pro-

motion expenses, and the like. In any event "Total Income" should represent the amount available for bond interest and other fixed charges, and Federal taxes. The amount left after these deductions are made is available for dividends on stocks, and for surplus.

Again, it should be recalled that practice differs among corporations as to the form in which the income account is published. Some corporations include Federal taxes in operating expenses; others do not charge depreciation as an operating expense but insert it later in the income account, perhaps as a charge against surplus; still other corporations do not show gross sales at all; and so on. Complete lack of standardization again makes the analyst's task more difficult, for he is frequently required to use his ingenuity in interpreting various items. In the work of comparing one corporation's accounts with another, it is often necessary to rearrange the various corporate accounts in some standard form before any uniform results are possible. The arrangement suggested in the simple statements of Corporation A may be considered as an ideal grouping for analytical purposes.

Relation of income account to balance sheet.—All income and expense, *which has an effect one way or another on the proprietorship equity of the company*, is summarized in the income account. In the preceding example the profit and loss balance of \$70,000 represents the net change made in the surplus account of the corporation between the two balance sheet periods. This may be illustrated by referring to the first of the previous balance sheets assumed for this corporation, appearing on page 289, in which profit and loss surplus was carried at \$900,000 for the year ended December 31, 1927. It is known from the income account just shown that the 1928 balance sheet will have to show a \$70,000 increase in proprietorship equity. Presumably this will appear in the profit and loss surplus account.¹ It is in fact conceivable that the balance sheet of Corporation A might appear as follows, December 31, 1928:

¹ This statement assumes that no capital adjustments were made during the year, such, for example, as the writing up or down of fixed assets or the distribution of stock dividends. Such adjustments have an effect on proprietorship equity and do not necessarily appear in the income account for the period.

<i>Assets</i>		<i>Liabilities</i>	
Land and Buildings.....	\$1,025,000	Capital Stock	\$1,000,000
Machinery and Equipment.	525,000	Bonds	500,000
Inventories	700,000	Accounts Payable	400,000
Accounts Receivable	500,000	Notes Payable	200,000
Cash	320,000	Surplus	970,000
	<hr/>		<hr/>
	\$3,070,000		\$3,070,000

In other words, one must look to the income account for explanation of the changes that take place between two balance sheet periods. In the case of Corporation A, if no income account had been available, but merely the balance sheets for the years ended December 31, 1927 and 1928, respectively, and had it been known that the company paid dividends of \$100,000, net earnings for the period could have been determined by working backward. By subtracting the 1927 surplus from that for 1928 a gain of \$70,000 is shown. Adding to this \$100,000 in dividends, one arrives at total net earnings of \$170,000. In the case of corporations which fail to publish income accounts, but which do publish annual balance sheets, it is possible to estimate earnings in this way.

Analysis of United States Steel Company's reports: balance sheet.—Now that a typical balance sheet and income account have been examined and the relationship between the two statements traced, it will prove interesting to consider a set of actual accounts as published by a going concern. For illustrative purposes, the balance sheet and the income account of the United States Steel Company have been chosen. The accounts of this concern have been used, because they present several very interesting problems. In a way, the accounts of this corporation are very full. On the other hand, as published for stockholders, these reports reflect certain accounting practices that require adjustment before they can be used for accurate investment analysis. A complete presentation of the balance sheet of this corporation for the year ended December 31, 1926, is given on pages 296 and 297. The income account for the period appears on pages 301 and 302.

CONSOLIDATED GENERAL BALANCE SHEET, DECEMBER 31, 1926

ASSETS

PROPERTY ACCOUNTS—Properties Owned and Operated by the Several Companies:

Balance of this account as of December 31, 1926, less Depletion, Depreciation, and Amortization Reserves per table on page 14 (pamphlet report)..... \$1,667,391.498.21

MINING ROYALTIES—

Mining Royalties on unmined ore, in respect to part of which notes of subsidiary companies are outstanding in amount of \$26,408,316.17, as see contra..... \$65,789,584.74
Less, Reserved from Surplus to cover possible failure to realize all of same..... 7,000,000.00

58,789,584.74

DEFERRED CHARGES (applying to future operations of the properties)—

Advanced Mining and other operating expenses and charges..... \$1,865,991.95
Discount on subsidiary companies' bonds sold (net)..... 948,924.88

2,814,916.83

INVESTMENTS—

Outside Real Estate and Investments in sundry securities, including Real Estate Mortgages..... \$10,373,855.25
Land Sales, Installment Contracts and Mortgages under Employees' Home-owning Plan..... 14,996,480.20

25,370,335.45

SINKING AND RESERVE FUND ASSETS—

Cash resources held by Trustees account of Bond Sinking Fund..... \$1,609,034.20
(Trustees also hold \$214,204,000 of redeemed bonds, not included as liabilities in this Balance Sheet.)

3,857,022.90

Contingent Fund and Miscellaneous Assets.....

Insurance and Depreciation Fund Assets (includes bonds available for future sinking fund requirements):

Securities *..... \$100,917,614.59

Cash..... 3,791,011.37

104,708,625.96

110,174,683.06

* *Note.*—There are not included in this item capital obligations of subsidiary companies amounting to \$41,660,365.54, held in these funds, as such obligations are excluded from liabilities in this consolidated balance sheet. Such securities were acquired direct by United States Steel Corporation from the subsidiaries.

CURRENT ASSETS—

Inventories, less credit for Reserve and for amount of inventory values representing Profits earned by Subsidiary Companies on Intercompany sales of products on hand in Inventories, December 31, 1926. (See note opposite.)

Accounts Receivable..... \$281,255,460.67

Bills Receivable..... 86,428,934.69

Agents' Balances..... 7,341,120.37

Sundry Marketable Securities (including part of U. S. Govt. securities owned)..... 1,347,674.30

Time and other special Bank Deposits..... 72,615,282.32

Cash (in hand and on deposit with banks, bankers and trust companies, subject to check)..... 8,072,744.60

..... 132,536,949.91

589,598,166.86

\$2,454,139,185.15

LIABILITIES

CAPITAL STOCK OF UNITED STATES STEEL CORPORATION—		
Common.....	\$508,302,500.00	
Preferred.....	360,281,100.00	\$868,583,600.00
		476,754.23
CAPITAL STOCKS OF SUBSIDIARY COMPANIES NOT HELD BY UNITED STATES STEEL CORPORATION (Book value of same)		
BONDED, MORTGAGE AND DEBTURE DEBT OUTSTANDING— (For detailed statement see page 22, pamphlet report.)		
United States Steel Corporation 50 Year 5% Bonds.....	\$179,866,000.00	
United States Steel Corporation 10-60 Year 5% Bonds.....	160,236,000.00	
	\$340,102,000.00	
Subsidiary Companies Bonds, guaranteed by U. S. Steel Corporation.....	98,739,000.00	
Subsidiary Companies Bonds, not guaranteed by U. S. Steel Corporation.....	53,187,900.00	
Subsidiary Companies Real Estate Mortgages and Purchase Money Obligations.....	660,452.99	
		492,689,352.99
SUBSIDIARY COMPANIES' MINING ROYALTY NOTES— Maturing over a period of 32 years, substituted for previously existing mining royalty obligations—Guaranteed by United States Steel Corporation, \$25,238,316, not guaranteed, \$1170,000; non-interest bearing, \$25,907,352, interest bearing, \$500,964.....		
		26,408,316.17
CURRENT LIABILITIES—		
Current Accounts Payable and Pay Rolls.....	\$56,597,901.07	
Accrued Taxes, not yet due, including reserve for Federal Income Tax.....	42,430,211.86	
Accrued Interest, Unpresented Coupons and Unclaimed Dividends.....	6,884,599.66	
Preferred Stock Dividend No. 103, payable February 26, 1927.....	6,304,919.25	
Common Stock Dividend No. 90, payable March 30, 1927.....	8,805,293.75	
		121,121,925.59
Total Capital and Current Liabilities.....		\$1,509,279,948.98
SUNDRY RESERVES—		
Contingent, Miscellaneous Operating and other Reserves.....	\$81,183,368.92	
Insurance Reserves.....	40,173,467.66	
		121,356,836.58
		270,000,000.00
APPROPRIATED SURPLUS TO COVER CAPITAL EXPENDITURES— (See statement on page 14, pamphlet report.)		
Invested in Property Account—Additions and Construction.....		
UNDIVIDED SURPLUS OF UNITED STATES STEEL CORPORATION AND SUBSIDIARY COMPANIES—	\$25,000,000.00	
Capital Surplus provided in organization.....		
Balance of Surplus accumulated by all companies from April 1, 1901, to December 31, 1926, per table on page 2 (pamphlet report).....	\$28,502,399.59	
Total, exclusive of Profits Earned by Subsidiary Companies on Intercompany sales of products on hand in Inventories, December 31, 1926 (see note below).....		553,502,399.59
		\$2,454,139,185.15

Note.—That part of the Surplus of Subsidiary Companies representing Profits on sales of materials and products to other subsidiary companies and on hand in latter's Inventories, is, in this Balance Sheet, deducted from the amount of Inventories included under Current Assets.

While many of the items appearing in this statement are clear, others require some explanation. The first account to appear is that of "fixed investment." Here is represented the value of the fixed assets of the corporation: plants, furnaces, steel mills, mining properties, and so forth. It appears that these are carried at their net valuation, that is, "less depreciation." "Mining royalties," on the other hand, are valued first at their appraised value and then a reserve is set up to cover contingent losses. If this reserve is properly determined the extended figure represents the true value of the royalties. If they are over or under estimated a subsequent adjustment will have to be made in the surplus account of the company. "Deferred charges," which are explained as charges having been incurred and really chargeable against future income or operations, are carried at the nominal amount of \$1,865,991.95. Discount on bonds is another type of deferred charge. Where bonds are sold at less than par, it is customary to credit "bonds outstanding" for an amount equal to the par value of the bonds sold and to debit "cash" for the amount of cash received, and "bond discount" for the difference between the par value of the bonds and the cash received. Each year during the life of the bond an equal amount is charged to earnings and credited to bond discount. In this way the discount is absorbed over the life of the bond and is not all charged against earnings or surplus in one year. Technically, such an account should be eliminated from the assets of the company and an equal sum deducted from surplus in order to facilitate analysis. If the account is small it may be ignored. The reverse situation occurs when bonds are sold at a premium. Here cash is debited for the entire amount received, which is in excess of the bonds issued. Bonds outstanding are credited with the par amount issued and "premium on bonds" is credited for the balance. This sum is then gradually credited to earnings over the life of the bonds. For analytical purposes "premium on bonds or stocks" may be converted into surplus.

"Investments" may be passed over lightly, for no detailed explanation is required. "Sinking and reserve fund assets," however, require a more detailed discussion. The published statement, although it gives some clue as to the purposes for which these assets are held, does not convey full information.

Those designated as "cash resources held by trustees account of bond sinking fund" are clearly cash reserves held for retirement of bonds. The item, "contingent fund and miscellaneous assets," is less clear, although it may be assumed that this item and the following one, designated as "insurance and depreciation fund assets," are offset on the liability side by "sundry reserves," amounting in all to \$121,356,836. These several items are difficult to analyze in the absence of supporting detail. Do they represent proprietorship items, or a reserve fund to meet real contingent liabilities? If there is a reasonable chance that the \$121,356,836 of "Sundry reserves" will some day be required to meet actual losses then insurance contingent fund assets may be required for the indicated purpose, and these assets must be regarded as appropriated for specific uses. On the other hand, to the extent that these assets are not required to meet contingent losses, eventually they may be regarded as the property of the stockholders. It has been the practice of this company to charge annual earnings for certain funds placed in sinking fund reserves and to credit contingent and operating reserves. This account, therefore, is in the nature of a further offset against assets, a sort of depreciation or depletion reserve account, so to speak. Although this policy strikes one as conservative, we shall follow the company's appraisal of the situation and shall not regard any of the amounts as proprietorship items. Similarly, we shall construe charges for bond sinking fund, which will appear subsequently, as a charge against earnings.

The items included under current assets are well described by their titles and do not require elaborate definition. It should be recalled, however, that the various accounts here classified represent sums that may, or will shortly, be converted into cash. There is a distinct advantage in a grouping of such accounts under one heading, for it is important that the analyst know what proportion of total assets are in liquid form. All assets listed up to this point are fixed. That is, they represent a permanent investment which is not ordinarily converted into cash, and which is not capable of being converted, except at considerable inconvenience and with the possibility of loss. Current assets, on the other hand, will be, or at least may be, converted into cash within from three to six months.

Turning next to liabilities we note that the first item consists of stocks of the United States Steel Corporation. The second item consists of stocks of subsidiary companies owned by the public. That is, the process of consolidation here is not complete, for some of the minority stocks of subsidiaries are owned by outsiders. Under the next heading is included all bonds of the United States Steel Corporation and subsidiaries. The sum total of these and the next item, designated, "subsidiary companies mining royalty notes," may be said to represent the "funded" or "fixed" debt of the corporation. This debt is not to be compared with the amounts represented by the capital stock accounts, which designate ownership, nor with the item "current liabilities," under which all obligations that come due within the next few months are grouped. The reasons why current accounts should be grouped under a single heading will appear more fully later. For the time being it will suffice to state that the analyst should not only know what proportion of the corporation's assets may be readily converted into cash, but he should also know the total amount of liabilities which the corporation may be called upon to meet within the current period.

The character of the next item is not entirely clear. It would appear that the company carries some of its own insurance, which is entirely proper, where the distribution of risks is sufficiently wide. This operation requires a credit to insurance reserves in an amount each year which measures the actuarial chances of loss. The \$40,173,467.66 will not be considered, therefore, as a proprietorship account. The \$81,183,368.92 item represents contingency and operating reserves. This company has followed the policy of charging earnings annually for all amounts put in sinking fund reserves and of crediting the account "contingency and operating reserves." This permits subsequent write-offs in assets and adjustments in contingency reserves to be made without reference to earnings in any given year. On the other hand, if this account is in excess of the amounts required for subsequent write-offs, then earnings have been concealed. Although it is probable that the company has been very liberal in the amounts credited to this reserve, as already explained, we shall regard it in the same light as the auditors, and will not consider it as a proprietorship item.

The last two items appearing in the balance sheet are strictly proprietorship reserves. The only distinction between "appropriated surplus to cover capital expenditures" and "undivided surplus" is that the former item represents earnings that have been strictly appropriated and committed to the enterprise, while "undivided surplus" represents free surplus and may be disposed of in any way that best fits the needs of the corporation. It may be paid out in dividends or it may be retained in the business.

United States Steel Corporation income account: 1926.—

The income account for the year ended December 31, 1926, as actually published by the company, may now be given in full.

INCOME ACCOUNT, INCLUDING SUBSIDIARY COMPANIES, UNITED STATES STEEL CORPORATION, 1926

Gross Sales and Earnings	\$1,508,076,091
Manufacturing and Prod. Cost Included Ordinary Maintenance and Repairs and Provides Depreciation	\$1,264,973,911
Administrative and Selling	38,972,713
Taxes:	
Local	\$35,266,010
Federal	17,133,571
	<hr/>
	52,399,581
Commercial Discounts and Interest.....	9,595,447
	<hr/>
	\$1,365,941,653 *
Less Amount Included in Above for Depletion and Depreciation. Here Deducted as Item Is Shown Separately Below	53,171,075
	<hr/>
	1,312,770,577
Balance	<hr/>
	\$ 195,305,513
Sundry Gains and Losses, Including Royalties Received, Idle Plant Expenses, etc.	\$5,064,747
Rentals Received	1,605,120
	<hr/>
	6,669,867
	<hr/>
Total Net Mfg., Prof. and Op. Inc. before Providing for Deprec. and Depletion.....	\$201,975,380

302 INVESTMENT PRINCIPLES AND PRACTICES

OTHER INCOME AND CHARGES

Net Profits of Properties Owned.....	\$ 241,108	
Income from Sundry Investments.....	12,694,402	
		<hr/>
		12,935,510
Balance		<hr/>
		\$214,910,890
Less Reserve for Estimated and Contingent Liability of Sub. Rrs. to Rrs. Under Transp't'n Acct.	\$2,641,382	
Intercompany Profits Not Realized.....	4,924,355	
		<hr/>
		7,565,737
Total Earnings, Year 1926.....		<hr/>
		\$207,345,157
Less Interest Charges on Subsidiary Bonds.....		8,286,284
		<hr/>
		\$199,058,869
Less Charges and Allowances for Depletion and Depreciation as Follows:		
To Deprec. and Replacement Reserves and Sinking Funds on Subs. Bonds.....	\$53,171,076	
To Sinking Funds on Bonds U. S. S. Corporation	11,049,835	
		<hr/>
		64,220,911
Net Income for Year 1926.....		<hr/>
		\$134,837,958
Deduct Interest on U. S. S. Corp. Bonds....	\$17,228,669	
Premium on Bonds Redeemed	1,242,985	
		<hr/>
		18,471,654
Balance		<hr/>
Add Miscellaneous Balances		\$116,366,304
		301,100
		<hr/>
		\$116,667,404
Deduct		
Preferred Dividends	\$25,219,677	
Common Dividends	35,581,175	
		<hr/>
		60,800,852
		<hr/>
		\$ 55,866,552
Appropriated for Add. and Betterments		30,000,000
		<hr/>
Carried Forward to Undivided Surplus		\$ 25,866,552
Previous Surplus		521,863,109
Add Miscellaneous Capital Gains		5,772,737
		<hr/>
Profit and Loss Balance, 1926.....		\$553,502,399

* Cents dropped. This accounts for slight discrepancies in last digit.

Suggested rearrangement for purposes of analysis.—A few general observations may now be made to assist in clearing up certain points in the preceding statement. Under "operating expenses" are included, among other items, Federal taxes amounting to \$17,133,571. This item can hardly be called an operating expense in the strict sense of the word and may well be subtracted from this section of the report and entered at a later point. On the other hand, "depletion and depreciation," amounting to \$53,171,075, is excluded from operating expenses in the report, but is added later. For purposes of analysis this item should be retained under operating expenses. In addition to the \$53,171,075 depreciation item, which is subsequently charged back, there appears an item of \$11,049,835 for sinking funds on United States Steel Corporation bonds. This charge against earnings is probably accompanied by a credit to contingency reserves as already explained. In this way the company is providing for extraordinary losses and depreciation not legitimately included under operating expenses. It appears logical, therefore, to leave this item in its present location. With these changes in mind, the income account of this company may be consolidated and reconstructed somewhat as follows:

Gross Earnings	\$1,508,076,091
Operating Expenses	<u>1,348,808,082</u>
Operating Income	\$ 159,268,009

Add Other Income:

Rental and Royalties Net.....	\$ 6,669,867
Investment Income	12,935,509
Misc. Balances	<u>301,100</u>
Total Income	\$179,174,485

Less Other Expenses:

Sinking Funds (credited to contingent re- serves)	\$11,049,835
Premium on Bonds Redeemed	1,242,984
Miscellaneous	<u>7,565,737</u>
	19,858,556
Available for Charges	<u>\$159,315,929</u>

Charges:		
Subsidiary Bonds	\$ 8,286,284	
U. S. S. Bonds	17,228,669	
		<hr/>
		25,514,953
Federal Taxes		17,133,571
		<hr/>
Balance after Charges		\$116,667,405
Dividends:		
Preferred	\$25,219,677	
Common	35,581,175	
		<hr/>
		60,800,852
		<hr/>
Available for Surplus		<u>\$55,866,552</u>

If the reader will turn back to page 293 he will observe that the arrangement of the various major divisions of accounts there outlined for a hypothetical corporation conforms closely to the simple regrouping just suggested for the United States Steel statement. There is a strong motive in simplifying complex statements in this way and in providing for a standard arrangement. That such a course greatly facilitates the whole task of financial analysis becomes increasingly apparent as the subject is developed.

Use of ratios, in analysis of corporate reports.—It is, of course, difficult, in fact, practically impossible, for one to digest a mass of statistical or financial data without first determining certain bases of comparison or units of measurement. The mere figures that appear in the balance sheets and the income accounts of corporations contain a wealth of information, but this information cannot be utilized satisfactorily without a definite plan of attack. It is our next purpose to develop such a plan and to emphasize the more significant information that may be derived from the financial statements of corporations by the establishment of certain account ratios.

Capital structure.—The first matter to be considered is "capital structure." This subject has already been discussed in a general way and for that reason need not be studied exhaustively at this time.² Complete data relative to the capital structure of a corporation may be had from its balance sheet. Here is set forth all bonds outstanding, and all preferred stocks, common stocks, and surplus and other proprietorship

² See Chapter XII.

reserves. The total investment of a corporation, as carried on the books of the company, is represented by the sum of all these items. Trade accounts and notes payable are not regarded by the author as an investment. It is true that trade creditors have a temporary investment in the debtor concern, but this investment arises from the convenience of doing business on a credit basis and not from choice. Furthermore, such investment is ordinarily for a very short time and is in no way permanent, except in unusual cases. It is true that a going company, by virtue of having on its books at all times an average amount of current liabilities, has the use of these funds; yet, for purposes of analysis, we prefer to exclude this item from both capital structure and investment.

By reference to the balance sheet of the United States Steel Corporation, December 31, 1926, it may be observed that it had the following book investment:

Bonded, Mortgage, and Debenture Debt.....	\$ 492,689,353
Subsidiary Co. Mining Royalty Notes.....	26,408,317
Preferred Stocks	360,281,100
Subsidiary Stocks	476,754
Common Stock	508,302,500
Appropriated Surplus	270,000,000
Undivided Surplus	553,502,400
Total Investment	\$2,211,660,424

From the preceding schedule it appears that the total book value of the investment in the United States Steel Company stood at \$2,211,660,424. This was made up as follows:

	<i>Per Cent</i>
Funded Debt	23.4
Preferred Stock	16.3
Common Stock and Surplus....	60.3
	<hr/>
	100.0

Or, stated in terms of the ratio of debt to proprietorship equity, it appears that for every dollar the bondholders had invested in the enterprise the stockholders had \$3.26 invested. This represents a reasonably conservative ratio for this corporation, which is engaged in a basic industry and which occupies a very strategic position in the industry. A ratio of at least 1 to 3 or 1 to 4 is desirable among industrials. From the common stockholders' standpoint it is sometimes desirable to show the ratio of bonds and preferred stock outstanding to

total capitalization, for the preferred stock, of course, represents a contingent charge against earnings and assets preceding the common. In this case, preferred stock and bonds constitute 39.7 per cent of total capitalization, while common and surplus make up the other 60.3 per cent.

Capital structure, comparison of, with market value of common stock.—Another and perhaps more effective way in which to show the extent to which bonds are supported by succeeding equities is to compute the market values of the succeeding equities. If this is done in the case of the United States Steel Company the following comparisons result:

	In 10,000's
Bonds	\$ 519.6
Preferred and Subs. Stocks at Par	360.3
Common at $138\frac{3}{4}$ (av. 1926 price)	705.3

Market Value Total Investment (bonds and pref. stock at par) \$1,585.2

When the market value of the total investment is substituted for book investment, the bonds do not appear to be quite as well supported by the following equities. Thus, while each dollar of bonded debt is protected by 4.26³ dollars in terms of book assets, a dollar of bond investment is protected by only 3.05 dollars of assets at market values. This latter basis is really the more significant in determining the actual security behind bond issues.

The same process may be used in comparing the security behind preferred stock issues. Thus, in the preceding case, every dollar of preferred stock is secured by a succeeding equity with a market value of 2.96 dollars.

Relation of charges to income.—Not only is the investor interested in the value of the assets behind bond and preferred stock issues, but he is also interested in the extent to which a given bond or preferred stock issue is protected by earnings. Similarly, the common stockholder should know the number of times both fixed charges and preferred dividend requirements are earned. It has been suggested that an industrial bond ought to be secured by assets equal to four or five times the par amount of bonds outstanding. Similarly, it is a general rule that, on the average, the interest on industrial bonds should be covered at least three times, in order that the bond

³ Note that we are here referring to the total assets securing the bonds and not to the ratio of debt to succeeding equities.

should be considered safe. There is a danger, it is true, in making categorical statements of this kind, for, as we have seen, the risk elements in different concerns vary widely. Where specific statements of this kind are made, therefore, they should be considered as general in their application and subject to special conditions as they arise in actual practice.

The factor of safety.—In discussing the relation of earnings to charges it will be well to recall what was said in earlier chapters about the order of bond priorities. Where a corporation has several different issues outstanding, it is important to determine the order in which the various claims come. This can be done only by an examination of the contract provisions contained in the bond indenture. As a practical matter, however, current financial services generally give enough information to enable the proper arrangement. Having made such a study it is possible to determine the so-called "factor of safety" behind each issue.⁴ This is done by dividing the amount of earnings left after payment of interest charges on a given issue by the interest requirements for that issue.

The following example illustrates this principle and also shows how a junior mortgage bond may, during prosperous years, have a high factor of safety, but during poor years suffer more severely than do senior mortgage bonds. Assume the following data in respect to a corporation whose bonds we are analyzing:

DATA FOR BOND ANALYSIS *

	<i>Normal Year</i>	<i>Item</i>	<i>Poor Year</i>
Gross Income	\$1,000,000	A	\$900,000
Operating Expenses	600,000	B	540,000
	<hr/>		<hr/>
	\$400,000	C	\$360,000
Interest on First Mortgage.....	200,000	D	200,000
	<hr/>		<hr/>
	\$200,000	E	\$160,000
Interest on Second Mortgage.....	100,000	F	100,000
	<hr/>		<hr/>
	\$100,000	G	\$60,000
Interest on Third Mortgage.....	50,000	H	50,000
	<hr/>		<hr/>
	\$ 50,000	I	\$ 10,000

* Taken from Gerstenberg, C. W., "Financial Organization and Management," p. 167, 1924, Prentice-Hall, Inc.

⁴ See Gerstenberg, C. W., "Financial Organization and Management," p. 167, 1924, Prentice-Hall, Inc., 70 Fifth Ave., New York, for further discussion.

The factor of safety may be obtained by dividing the amount left after paying the interest on a bond by the amount of its interest. Using this definition we may compute the safety factors for the preceding bonds as follows:

	<i>Normal Year</i>	<i>Poor Year</i>
Factor of Safety on First Mortgage (E:D).....	100%	80%
Factor of Safety on Second Mortgage (G:F).....	100	60
Factor of Safety on Third Mortgage (I:H).....	100	20

The third mortgage apparently has as good a position as the first during a good year, yet falls close to the danger line when there is a drop of only 10 per cent in gross revenues. Therefore, it is necessary to take the relative position of the bond into consideration when employing this method. This may be done to some extent by considering the number of times charges on all issues up to and including the one under consideration are earned. In the present case, if this modification in respect to the third mortgage is made, it is found that the total amount available is \$400,000, whereas total charges are \$350,000. The factor of safety then becomes only 14.3 per cent in the normal year. It is recommended, therefore, that, when analyzing the number of times the interest on a given bond issue is earned, consideration also be given to the relation of total earnings to combined charges. It is possible, as has been indicated, to devise a capital structure that will show interest charges earned a large number of times on junior issues during normal years. It is of vital concern, however, to know how large prior charges are in relation to earnings available. "Earnings available" is the changing factor, "charges" are constant. How great a shrinkage in "earnings available" is possible without jeopardizing the position of the corporation? That is the important question. And this may be ascertained by determining the number of times total charges are earned on the average over a period of years.

Preferred dividend requirements and earnings.—In analyzing the position of preferred stocks in relation to earnings, one's first thought runs to the number of times preferred dividend requirements are earned, or to the "factor of safety" as previously defined. Precisely the same difficulties are present here as were found in respect to our analysis of junior mortgage bonds. Bond interest constitutes a charge which precedes preferred stock dividends. If the corporation has a

relatively large issue of bonds, and a relatively small issue of preferred stock outstanding, the factor of safety indicated for the preferred stock may be entirely unreliable. Suppose, for instance, that the capitalization and earnings of a corporation are as follows:

<i>Capitalization</i>		<i>Charges</i>
Common Stock	\$1,000,000	
Preferred Stock, 7%	3,000,000	\$210,000
First Mortgage Bonds, 6%....	4,000,000	240,000
Debenture Bonds, 7%	5,000,000	350,000
		\$590,000
<i>Income Account</i>		
	<i>Normal Year</i>	<i>Poor Year</i>
Gross Income	\$5,000,000	\$4,000,000
Operating Expenses	4,000,000	3,200,000
Available for Charges	\$1,000,000	\$ 800,000
Interest on First Mortgage Bonds....	240,000	240,000
	\$ 760,000	\$ 560,000
Interest on Debentures	350,000	350,000
Available for Dividends	\$ 410,000	\$ 210,000
Preferred Dividends	210,000	210,000
	\$ 200,000	\$ none

It appears that the preferred stock of this company has, during a normal year, a safety factor of over 95 per cent, yet a drop of 20 per cent in gross, even if we assume that the operating ratio does not change, completely wipes out this factor of safety. It is customary for investment bankers, when selling preferred stock issues, to state the number of times preferred dividends are earned. In this case the banker would, it is true, be accurate in stating that in the "normal year" preferred dividends were earned 1.95 times. The interest of prospective investors, however, should lie in ascertaining how many times preferred dividends *plus interest requirements* are earned. In the present instance, a normal year shows such requirements to have been earned only 1.25 times, which, indeed, marks the issue under consideration as highly speculative. To the author's mind, an industrial preferred stock should be regarded as speculative unless combined charges and dividend requirements are earned at least twice over a period of years.

Earnings, charges, preferred dividend requirements: U. S. Steel Corporation.—Before leaving the subject of earnings as security for charges, let us apply what has been said to the

data as presented for the United States Steel Corporation. Referring to page 303, we find the following statement relative to earnings and charges:

Available for Charges	\$159,315,929
Charges:	
Subsidiary Bonds	\$8,286,284
U. S. S. Bonds	17,228,669
	<hr/>
	25,514,953
Federal Taxes	17,133,571
	<hr/>
	\$116,667,405
Preferred Dividends	25,219,677
	<hr/>
Balance	\$ 91,447,728

We may now arrange these figures as follows for analytical purposes:

		<i>Item</i>
Earnings Available	\$159,315,929	A
Charges on Subsidiary Bonds.....	8,286,284	B
	<hr/>	
	\$151,029,645	C
Charges on U. S. Steel Corp. Bonds..	17,228,669	D
	<hr/>	
	\$133,800,976	E
Federal Taxes	17,133,571 *	F
	<hr/>	
Available for Dividends.....	\$116,667,405	G
Preferred Dividends	25,219,677	H
	<hr/>	
	\$ 91,447,728	I

TABLE SHOWING RELATION OF EARNINGS TO CHARGES, U. S. STEEL CORPORATION

(Based on 1926 Data)

<i>Issue</i>	<i>Safety Factor</i>	<i>Times Earned</i>
Subsidiary Bonds	C: B 1822%	19.22
Bonds of U. S. Corp.	E: D 777	8.77
Preferred Div. Req.	I: H 362	4.63
Number of Times Total Charges Earned †		6.25
Number of Times Charges and Pre- ferred Dividends Earned ‡		2.80

* Federal taxes are computed on the net earnings of the corporation and are, therefore, a charge that follows bond interest. If there were no earnings after bond interest, there would be no profits and no taxes. For that reason, we indicate taxes as a charge following bond interest. It does, however, precede preferred dividends, in that it is computed on earnings before such dividends.

† Exclusive of Federal taxes.

‡ Computed by dividing earnings after taxes by the sum of the bond interest and preferred stock dividends outstanding.

Based on the preceding data it appears that charges on the bonds and preferred stocks of the United States Steel Corporation were earned by a very satisfactory margin. The combined bond interest was earned in 1926 8.77 times, which is substantially in excess of the requirements for industrials, while combined charges and preferred dividends were earned 2.8 times. Both the bonds and the preferred stocks of this company are rated Aaa and warrant the high investment position which they are generally accorded.

Earnings "per share" of common.—Earnings "per share" of common stock are of significance to the stockholder, in that this indicates the real return on his investment. "Per share" earnings are ascertained by dividing "net" after preferred dividends by the number of shares of common stock outstanding. If we refer to the assumed income account for Corporation A, on page 293, we note that \$17 was earned in 1928 for each share of common stock, whereas \$10 a share only was paid as current dividends. For the United States Steel Corporation for the year 1926 we find total earnings available for common stock amounting to \$91,447,728. The number of shares of common outstanding were 5,083,025. Per share earnings for 1926 were, therefore, \$17.99.

Earnings per Share Versus Current Dividends.—The emphasis to be placed by the investor on "per share" earnings as compared to the current dividend payments on common stock will depend on several things. Where the investor seeks an immediate current return on his commitment, he naturally will seek those issues which have a record for regular dividend disbursements. On the other hand, the investor may prefer to forego present income in the form of dividends and invest in companies which are using net earnings for expansion purposes.

It has already been indicated that such earnings as are not paid out in dividends become the property of the common stockholder. In fact, the situation here is very much the same as if all income, after prior obligations, were paid out to the common stockholder and a portion reinvested by him in the business, except that, in the former case, the investment is made by the board of directors instead of by the stockholder himself. Earnings over and above current dividends should not only be regarded as true earnings, but should also be considered as

a safety factor in protecting the current dividend rate on the common stock.

Ratio of total income to total investment.—How far the officers of a corporation are justified in retaining earnings in the business for expansion purposes will depend on several things. Of course, dividends should never be paid in an amount sufficient to deplete necessary working capital, and likewise periods of depression may threaten future profits to an extent which requires present policies of the utmost conservatism. Except for such extraordinary situations, however, the normal reason for retaining earnings in the business is the fact that a further investment in the business can profitably be made. The measure of this profitableness is found in the ratio of *total income* to total investment.⁵ This ratio indicates the present capacity of the business to earn on its invested capital. In the case of the United States Corporation, the total investment on December 31, 1925, was \$2,168,410,871, whereas it stood at \$2,211,660,422, December 31, 1926.⁶ The average investment for the year was, therefore, \$2,190,035,646. This gives a rate of earnings on total average investment of about 7.3 per cent. It has been the author's experience that industrials as a group average to earn less than 8 per cent on invested capital. An industrial corporation which consistently earns in excess of 10 per cent may be considered above rather than below average.

The rate at which industrial concerns are able to earn on invested capital is subject to no law other than the economic one, that abnormal profits invite competition. Consequently, there is a tendency for all profits to be reduced to the normal rate necessary to attract capital and entrepreneurial ability. In a highly dynamic society, such as ours, however, it can hardly be said that this law has more than theoretical importance. In the public utility field, on the other hand, rates are so regulated as to reduce the return on the fair value of property employed for public uses to 7 or 8 per cent. In the case of the railroad industry, a $5\frac{3}{4}$ per cent return is allowed on

⁵ It should be noted here that we use income available for charges, since we include funded debt in our total investment.

⁶ Includes preferred and common stock outstanding, subsidiary stocks, bonded, mortgage, and debenture debt, royalty notes, appropriated surplus, and undivided surplus. See pp. 296 and 297 for balance sheet.

the property account. Industrial concerns, on the other hand, are unregulated, therefore, a wide range of earning power is found. A rate of 10 per cent or over may be regarded as satisfactory, although higher rates as well as lower are frequently found. In fact, the average of some companies over long periods is barely enough to meet fixed charges, while others consistently earn at a highly satisfactory rate on capital invested in the business.

Value of stock, how enhanced: S. S. Kresge Co.—Where the rate of earnings on invested capital is high, there is a strong incentive for the managers of the enterprise to retain a large share of net earnings in the business, limiting thereby the amount of common dividends. This likewise benefits the stockholders in the long run, for their equity is built up rapidly and the market value of their holdings inevitably increases. The recent history of the S. S. Kresge Company furnishes an excellent example of this very situation. This company, for the period from 1920 to 1924, showed excellent earnings on capital invested as indicated by the following table:

EARNINGS AND CAPITAL INVESTED—S. S. KRESGE COMPANY

(1920 to 1924, inclusive)

<i>Year</i>	<i>Average Capital Invested</i>	<i>Earnings</i>	<i>Rate of Earn- ings to Investment</i>
1920	\$18,333,068	\$2,753,506	15.0%
1921	21,021,645	3,402,033	16.2
1922	26,420,176	6,616,417	25.0
1923	33,919,313	9,493,988	28.0
1924	39,814,131	10,114,163	25.4

During the five years covered the company paid out, in cash dividends on its common stock, only \$6,288,857, although net earnings, after preferred dividends, were \$31,675,866. Earnings invested in the business thus amounted to \$25,387,009 for the period. Had these earnings all been paid out in cash and no stock dividends been declared during the period, additional dividends of \$253.87 might have been received on each share of the company's stock. The market value of the stock, therefore, should have appreciated during the five years studied by an amount equal, at least, to the amount reinvested in order to have compensated the stockholders for their sac-

rice in terms of dividends.⁷ The average price of the stock in 1920 was \$137.50 per share. In 1924 the average price was \$381.37 per share, but two stock dividends had been paid in the interim, giving the holder of a share of old stock 2.05 new shares for each share held. The 1924 value of an amount of stock equal to one share in 1920 was thus \$777.99, or \$640.49 in excess of the market value of the same equity in 1920. If we compare this sum with the \$253.87 which the holder of one share might have received in cash dividends, we rightly infer that the conservative policy of the directors in this case resulted in a net gain of \$386.62 per share for the stockholders of the company. The price of the stock of a company reflects at any time not only the actual earnings of the corporation, but also the value of the right it carries to have a certain number of dollars reinvested each year in an enterprise that has demonstrated a given earning power. Logically, the higher the earning power the more valuable the right.

We are led to the conclusion, therefore, that the ratio of earnings to invested capital is a highly important one, particularly in respect to the common stockholder. This ratio, taken in connection with the dividend policies of the corporation, may account in a measure for the apparently high prices at which some stocks sell in respect to earnings. In any event, an investment in the stock of a corporation which enjoys a high ratio of earnings compared to the investment, and which pays out only a portion of its current earnings in cash dividends, will frequently prove to be a very profitable commitment for the investor.

⁷ To say nothing of estimated interest thereon.

CHAPTER XIV

FINANCIAL ANALYSIS—INDUSTRIALS (CONCLUDED)

Operating ratios.—The term “operating ratio” has already been defined as the percentage of operating revenues consumed by operating expenses. The operating ratio of a corporation under normal conditions reflects its operating efficiency. It indicates that proportion of its sales which is used up in actual manufacturing, selling, and administration, including depreciation on plant and equipment. The peculiar behavior of the operating ratios of a typical manufacturing corporation under different conditions has already been discussed.¹ The fact that operating expenses cannot be reduced in proportion to sales during bad years emphasizes the value of a low ratio during normal operations. It is possible to compare the present efficiency of a corporation with its past performances by comparing ratios over a period of years. It is also possible to compare the operating ratios of different concerns in the same line of business to determine which are the most efficiently operated. Other things being equal, concerns with the lowest ratios are the most desirable media for investment. Such concerns have the least to fear during periods of depression, and, if competition becomes severe in the industry, they are most likely to survive, in that they can suffer the lowest price cuts before showing deficits.

Operating ratio: U. S. Steel Corporation.—We have followed the plan of making actual computations from the data as given for the United States Steel Corporation, in order to illustrate the way in which an analysis may be carried out in practice. The following section of the income account is necessary in order to compute operating ratios (for full report see page 303).

¹ See pp. 271 to 273.

OPERATING RATIO—UNITED STATES STEEL CORPORATION

(Based on 1926 Data)

Gross Earnings	\$1,508,076,091
Operating Expenses	1,318,808,082
<hr/>	
Operating Income	\$ 159,268,009
Operating Ratio	89.4%

Operating ratios will frequently be found between 80 and 90 per cent in the case of industrial companies, with a tendency toward the higher figure.² Where the ratio exceeds 93 per cent, the situation frequently assumes an unfavorable aspect. Where it is less than 80 per cent, the corporation may be said to operate at better than average efficiency.

Plant turnover.—Another means of testing the operating efficiency of a given corporation is to determine so-called "plant turnover." This may be defined as *the number of dollars in sales each dollar invested in fixed assets* is able to produce. This ratio is obtained by dividing gross revenues by the sum of the fixed asset accounts of the corporation. Referring to the balance sheet of the United States Steel Company, on pages 296, 297, we note that fixed assets, including property accounts and mining royalties, were carried at \$1,726,181,082, on December 31, 1926. Sales for the year were \$1,508,076,091, or at the rate of 87.4 cents per dollar of property investment. While it would have been more accurate to have divided sales by the average book value of the property account during the period, the method here used is substantially correct, for the change in these accounts is relatively small during the period. Where the corporation is growing rapidly, it is better to find the mean value between the account at the beginning and the end of the period for purposes of computing turnover figures.

² The following table will give the student some idea of the operating ratios found in typical steel companies during the past several years:

OPERATING RATIOS, TYPICAL STEEL CORPORATIONS
(1923 to 1925, inclusive)

Year	U. S. Steel	Bethlehem	Youngstown	Republic	Gulf States
1925	87.2%	87.0%	80.0%	85.5%	85.0%
1924	90.0	87.0	82.4	91.5	84.0
1923	87.0	87.0	83.5	85.5	80.5

On several occasions the observation has been made that the market value of industrial properties rarely equals their book values. It might be added further that the spread between market and book values in industrials varies widely among different corporations. A practical explanation of this situation may be found in the variation in plant turnover and operating ratios as between different companies. One might make the following general statement: A dollar of book investment in a corporation whose plant turn is \$2 a year per dollar of investment, and whose operating ratio is 80 per cent, is worth more to the investor than an equal investment in another plant whose turnover is but once a year and whose operating ratio is 90 per cent. In the first case, a dollar of book investment produces a profit of 40 cents, in the latter case only 10 cents. The ultimate profitableness of an investment, therefore, depends on the amount of gross business that it is capable of yielding and the cost of doing this business. As a check on the earning power of a given investment, it is often desirable to compute plant turnover as just defined and to compare this with operating ratios. A plant turnover of once per annum is considered reasonably good for manufacturing companies, although a turnover of two or three times a year is not uncommon.³

Current position: ratio of current assets to current liabilities and cash to current liabilities.—The next set of ratios to be discussed relates to the current position of the corporation: that is, the extent to which it is provided with liquid assets. The ratio most commonly used for this purpose is that of current assets to current liabilities. In banking circles it is a commonly accepted fact that current assets should be equal to at least two times current liabilities. In the case of the United States Steel Corporation, December 31, 1926, current assets amounted to \$589,600,000 and current liabilities to \$121,100,000. The current ratio for this concern thus about equaled 4.5:1. This line of inquiry may be carried somewhat farther and the ratio of cash to current liabilities may be ascertained. For the Steel Corporation this ratio was 1.16:1, if cash and bank balances are included. If marketable securities are also included the ratio becomes 1.76:1.

³ This matter is further discussed on p. 321, following.

One essential reason for pursuing such a line of inquiry is to ascertain how well the corporation is prepared to meet all current liabilities. Current liabilities, such as accrued wages, accounts and notes payable, interest, and the like, must be met when due. It is true that current assets supposedly may or will be turned into cash within a short period yet there is always uncertainty as to the time required for this process. Furthermore, concerns with adequate working capital can take advantage of all cash discounts, can expand current operations when necessary without bank borrowings, and are always in a position to increase inventories of raw materials when prices are advantageous.⁴ In cases where the amount of cash on hand is sufficient to meet all current liabilities it is true that the 2:1 ideal ratio loses some of its significance. So long as there is adequate cash to pay off all current debts it would seem that further current assets were redundant, at least, so far as protecting the corporation against temporary embarrassment is concerned. Nevertheless, a comfortable working position would require additional quick assets, even in such a case.

Inventory turnover.—Another indication of strength in current position is inventory turnover, which may be defined technically as *cost of sales* divided by the average value of inventories on hand. It is often impossible for the analyst to get cost of sales, so the gross revenues or sales figure must usually be substituted. Where inventories remain fairly constant throughout the year, it is sufficiently accurate to compute inventory turnover by dividing gross revenues by inventories at the year end, or by the average value of inventories at the beginning and end of the period. The question may be asked, What relation does inventory turnover have to current position? The answer is just this: The more rapidly inventories can be made to turn over, the more closely they approach cash in their nature. A corporation whose quick assets consist largely of slow moving inventories must maintain a much higher ratio of current assets to current liabilities than one whose current assets are composed of cash, receivables, and quick moving inventory. The United States Steel Corpora-

⁴ A strong cash position also assists a corporation in maintaining its usual dividend payments during periods of depression and furnishes a further safety factor for the payment of bond interest.

tion, according to the reports we presented in the preceding chapter, turned its inventories 5.35 times, based on year end data, or 5.32 times, based on the average inventory during the period. An inventory turnover of from 3 to 5 times may be considered normal for manufacturing corporations.

Ratio of net quick to investment.—A still further observation is necessary before we can say that the question of current position has been adequately covered. *Net quick assets*, or working capital, may be defined as the difference between quick or current assets and current liabilities. The current ratio by itself utterly fails to indicate whether a given concern has sufficient working capital. A corporation with a total investment of \$10,000,000 might have current assets of \$100,000 and current liabilities of \$10,000, its current ratio thus being 10:1. Another corporation with a similar investment might have current assets of \$3,000,000 and current liabilities of \$1,000,000. The working capital or "net quick" of the first corporation amounts to only \$90,000, or 9 per cent of its total investment, while, in the second case, working capital amounts to \$2,000,000, or 20 per cent of total investment. Although the current position of the first company would indicate greater strength, further analysis indicates that it is nowhere nearly as well supplied with working capital as the second concern. The percentage of "net quick" to total investment, or the amount of "net quick" per dollar of total investment, is, therefore, an important ratio. It not only indicates the extent to which the corporation's investment is tied up in liquid, as compared with fixed, assets, but it also gives some clue as to the corporation's ability to expand operations without additional borrowing, or to maintain current dividends without interruption during periods of depression.

Referring again to the data previously given for the United States Steel Corporation for the year ended December 31, 1926, we find that its net quick assets, or working capital, amounted to \$468,476,241, while its total investment at the same time was \$2,211,660,424. The ratio of "net quick" to total investment at this time was thus about 21.2 per cent. In other words, every dollar of investment was represented by 21.2 cents of net quick assets, and 78.8 cents of fixed assets. While no definite rules can be laid down as to the proper ratio for a given case, it may be said that a ratio of 20 per

cent is satisfactory. This should prove adequate to insure normal operations against a reasonable period of depression. There are some concerns that maintain net quick assets as high as 50 per cent of total investment, while other reasonably strong companies maintain a ratio as low as 10 per cent.⁵

Book value of common stock and earnings.—There are several other miscellaneous items that should be investigated before our general financial analysis can be considered as finished. These items pertain more especially to the common stock of the company. The book value of the assets behind common stock is of interest, even though this gives no clue as to the market value of the stock. There is, however, a general disposition on the part of investors to feel that stocks protected by substantial book assets are more secure than stocks which sell largely on the basis of earnings, and which are not protected by substantial tangible assets. Undoubtedly the theory of those who hold this view is that the existence of large tangible assets constitutes a sort of insurance against excessive competition. That is, companies and industries which are able to earn at a relatively high rate on their book investment naturally invite the investment of further capital. New concerns are attracted into the field by this situation, a possibility which certainly works against stability in current earning power. There may be a disposition, however, to overemphasize the ability of a large fixed investment to protect a company against competition. Furthermore, we find at

⁵ For examples of companies with large net quick assets at the close of 1926 see U. S. Cast Iron Pipe, with 39 cents in net quick assets for every dollar of investment; Allied Chemical, with a ratio of 61 per cent; and Westinghouse Air Brake with a ratio of 53 per cent. The following table will indicate the extent to which leading steel companies have been supplied with net quick assets or working capital during the past several years:

NET QUICK PER DOLLAR TOTAL INVESTMENT, SELECTED STEEL COMPANIES

(1923 to 1925, inclusive)

Year	U. S. Steel	Bethlehem	Gulf States	Republic Steel	Youngstown
1925 .....	.19	.199	.203	.193	.348
1924 .....	.189	.233	.247	.185	.345
1923 .....	.200	.203	.227	.235	.357

this point a direct contradiction of certain observations previously made. If a high capital investment is required to support a given market value, then, *per se*, the rate at which capital invested in the business is able to earn must be low. Plant turnover must also be low and operating ratios relatively high. Otherwise, the earnings resulting from a given book investment would be so high that the market value of the common stock of the company would tend to exceed its book value.

This may easily be explained by reference to data for the United States Steel Corporation. We have already seen that this corporation earned on its total capital investment in 1926 about 7.3 per cent. This can scarcely be considered remarkable, when it is recalled that public utility companies are frequently permitted to earn 8 per cent. The operating ratio of this company for the year 1926 was 89.4 per cent, while investment in plant was turned only about .874 times. The book value of the common stock, December 31, 1926, was approximately \$260, while the average price for the year was only \$138.75. Per share earnings in 1926 were approximately \$18. The stock thus averaged to sell on a multiple of 7.7 times earnings, or on a 13.0 per cent capitalization basis. Let us assume, now, for the sake of argument, that the corporation is able to increase its rate of earnings on capital invested from 7.3 to 15 per cent, and that it is partially assisted in this by a substantial reduction in operating ratios and by having increased its plant turnover to produce and sell, not \$1,508,076,091 worth of goods, but \$2,500,000,000 worth (that is, about 1.5 times its fixed assets of \$1,667,391,000). It will be recalled that the total investment in this company was carried at \$2,211,660,424, December 31, 1926. If this figure is taken as properly representing capital invested, for purposes of illustration, then earnings available for charges must have been \$331,749,000, on the basis of a 15 per cent rate of earnings on investment. If it is assumed that other expenses remained at \$19,858,556 (see page 303) and other income at \$19,906,476, then operating income must have equaled \$331,701,080. This set of conditions assumes an operating ratio of 86.7 per cent instead of the actual ratio of 89.4 that was attained during the year. If we continue this basis of computation and assume that fixed charges and preferred dividends remain the same, that is, \$67,868,201, then there would

have been available for common stock equity \$263,880,799,⁶ or about \$51.90 a share. If the stock continued to sell at about 7.7 times earnings per share, its price would have advanced to \$399.63 a share, a figure which is substantially in excess of its book value of \$260 a share.

Previously it was stated that corporations with a high rate of earnings on invested capital, other things remaining equal, are more desirable as media for investment than are low earning corporations. Yet, as the rate of earnings on invested capital increases, earnings on common stock increase, the price per share of the stock advances, and the stock of such companies is often found selling substantially above book values. This line of analysis seems to indicate that intangible assets are even more valuable than tangible. What is the answer to this seeming contradiction? Both lines of argument have some merit in the abstract. In a concrete case, however, it is always necessary first to determine how dangerous the lack of physical or tangible assets is. If the business is old and established and has intangible elements of permanent value, which is the case with many banks located in the downtown sections of rapidly growing cities, established insurance companies, large chain store groups, and manufacturing concerns which enjoy valuable patent monopolies, then the danger of competition is minimized and the value of high earning power is enhanced. In the case of new enterprises, such as the radio, electric refrigeration, auto accessories, and, to some extent, the automobile field, where competitors are not prevented by the existence of an established name and personnel, from capturing the field, or where rapid changes are likely to occur in the industry, then the existence of a high rate of earnings in the industry is very likely to invite new capital and to threaten the current earning power of companies already in the field. It is one of the functions of the analyst to determine which of these two factors is the more important.

Earnings per share of common, current dividends, and market values.—The relation of common stock earnings to market values is, of course, a matter of interest to those who purchase common stocks in contrast to preferred stocks

⁶ Federal taxes would increase somewhat, although we have made no adjustment in our computations for illustrative purposes.

and bonds. It has consistently been our contention that the market value of common stocks is a function of *earnings available*, and the risk factors involved in the industry and in the concern itself. By comparing the multiples at which the stocks of various companies sell in relation to earnings, it is possible to determine which appear to be cheap and which appear to be high priced. The current dividend rate on common stock is another factor that has some bearing on values, although it is impossible to lay down any general rules in this respect. One would ordinarily suppose that current dividend rates would have a very decisive effect on market prices. This is not entirely true, however, for it is possible for a stock to continue selling for years on the basis of earnings rather than of current dividends. This is especially true of companies that are growing rapidly, and, consequently, can use all earnings to good advantage for developmental purposes. Such companies sometimes substitute stock or scrip dividends for cash dividends.⁷ In this way the stockholder is given some evidence of the additional investment in the business which has been made for him by the directors. Where payments are made in this way the small investor is likely to feel that he is being better treated than when earnings are simply credited to surplus, although there is no fundamental difference, so far as the extent to which he is permitted to participate in the assets and earnings of the company is concerned.

On the other hand, stocks of companies that are barely able to earn current dividends, or which are paying current dividends out of surplus, often sell at prices so low that one is justified in assuming that current dividends are an insignificant factor in determining their values.

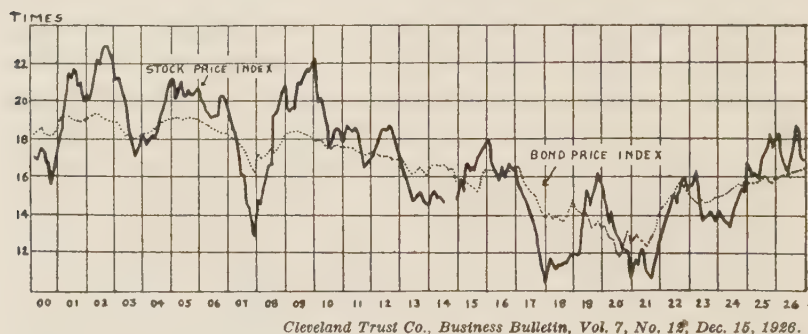
In a study made by the Cleveland Trust Company⁸ of the quoted prices of dividend-paying common stocks for the period 1920 to 1926, inclusive, it appears that during this period common stocks averaged to sell at from slightly over 10 to nearly 23 times their dividends. They averaged to sell at

⁷ See particularly North American Company, which has paid no cash dividends since July, 1923, but which pays $\frac{1}{40}$ of a share of stock quarterly in scrip. See also Tampa Electric, which pays partly stock and partly scrip. Schulte Retail stores paid all or part of its common stock dividends in scrip until 1926.

⁸ Cleveland Trust Company, "Business Bulletin," Vol. 7, No. 12, Dec. 15, 1926.

16 times their current dividends, or to yield 6.25 per cent on their selling price. In this same study it was shown that the yield on common stocks followed, in a general way, the yield on bonds. That is, during years when the yield on bonds was high, stock prices were relatively low and the yield correspondingly high, while during years of low bond yields the situation in respect to stocks was likewise reversed. The conclusion from this study was that money rates have some effect in determining stock prices as well as bond prices. This is shown in the following chart:

Fig. 13.—Stock Prices as Multiples of Dividends and Index of Bond Prices, 1900 to 1926, Inclusive.



Necessity for comparative analysis.—Up to the present time attention has been directed to a series of ratios which may be derived from the income accounts and balance sheets of a corporation for the purpose of measuring the financial condition of a corporation at any time. Valuable as such measurements are by and of themselves, they become more useful if they can be compared with standards. In the field of investments, as in other sciences, standards are a matter of relativity. A mere statement that the temperature stands at 50 degrees Fahrenheit in a given locality at any instant does not tell us whether it is high or low, as compared with previous dates for the same locality, or as compared with other localities. In fact, it is not until we have made the proper comparisons that we can arrive at any conclusions of this nature.

So it is with our problem. Thus far, a method for making certain measurements has been constructed. The next prob-

lem, therefore, is to derive a workable plan whereby not only the present measurements, or ratios, for a given concern can be compared with its past records, but whereby the records of one concern can also be compared with those of other concerns in the same industry. In this way only can we determine the relative desirability of the securities of one company as compared with those of another company, in so far as the financial conditions of the two concerns are involved.

Comparison, facilitation of, by financial analysis card.—In order to facilitate comparisons of this nature the author has devised a form which he calls, for convenience a "financial analysis" card. The purpose of this device is to facilitate the kind of analysis already suggested and also the preparation of comparative studies of industrial companies. The card provides a convenient arrangement for collecting all the data necessary for computing the ratios suggested in the preceding discussion as well as for entering these ratios for a given concern over a period of years. On the reverse side of the card, quarterly data may be entered if desired. The cuts on pages 326 and 327 will show the form as at present used.

The first section of the card is devoted entirely to a collection of the data necessary for computing the ratios called for. From a purely mechanical standpoint there is a distinct advantage in collecting and arranging at the outset the items to be used in subsequent computations, especially where a rearrangement of the original corporation accounts is necessary, as is frequently the case in practice. The computation of ratios thereafter becomes merely a matter of arithmetic. Where the computations are made by actual division on a machine, or otherwise, it is sufficient to use only the first two or three digits of each number. Computations may be facilitated, however, by the use of the slide rule, which gives sufficient accuracy for all practical purposes.

The lower half of the card is devoted entirely to the presentation of the ratios which have been discussed in this and the previous chapter, although the ratio of cash to current liabilities is omitted and a slight rearrangement in order is made. The grouping used on the card was adopted with the idea of securing the most ideal arrangement from a mechanical standpoint. It will be observed in this connection that each section of the lower half of the card contains, so far as possible, a group of

more or less related ratios. The first section is devoted entirely to an analysis of the capital structure of the corporation

Fig. 14.—Industrial Financial Analysis Card (Obverse).

FINANCIAL ANALYSIS					
COMPANY _____					
DATA					
Year	19	19	19	19	19
Gross Sales					
Operating Expenses					
Total Income					
Fixed Charges					
Net Earnings					
Preferred Dividend Req'm'ts					
Total Assets					
Total Investment					
Funded Debt					
Preferred Stock					
Common Stock & Surplus					
Current Assets					
Current Liabilities					
Working Capital					
Property Account					
Inventories					
Depreciation					
Market Value					
Total Investment					
Net Worth					
Common Stock Equity					
RATIOS					
% Investment in Bonds					
% Investment in Pfd. Stock					
% Investment in Com. & Surplus					
Ratio Debt to Mkt. Val. Investment					
Ratio Pfd. to Mkt Val. Net Worth					
Number Times Charges Earned					
Number Times Pfd. Div. Earned					
Number Times Chgs. & Pfd. Earned					
Earnings Per Share Common					
% Earned on Total Investment					
Operating Ratio					
Plant Turnover					
Inventory Turnover					
Ratio Our. Assets : Our. Liab.					
Work. Cap. Per \$ Total Inv'm't					
Aver. Market Price Common					
Current Dividends					
Book Value Per Share Common					

under consideration. Here is shown the percentage of capitalization made up of bonds, preferred stock, and common stock and surplus. The relation of the par value of bonds and preferred stock outstanding to the market value of

the underlying assets, as measured by the current prices of the common stock of the corporation, is likewise indicated.

Fig. 14.—Industrial Financial Analysis Card (Reverse).

FINANCIAL ANALYSIS					
COMPANY _____					
QUARTERLY EARNINGS					
	19	19	19	19	19
Quarterly Earnings					
1st Quarter					
Earnings per Share Common					
Annual Rate					
Average Price					
Cur. Ratio Price to Earnings					
Our Estimated Value					
2nd Quarter					
Earnings per Share Common					
Annual Rate					
Average Price					
Cur. Ratio Price to Earnings					
Our Estimated Value					
3rd Quarter					
Earnings per Share Common					
Annual Rate					
Average Price					
Cur. Ratio Price to Earnings					
Our Estimated Value					
4th Quarter					
Earnings per Share Common					
Annual Rate					
Average Price					
Cur. Ratio Price to Earnings					
Our Estimated Value					
Remarks					

It should be clearly understood, when computing the ratio of debt to the market value of the investment, that the market value of total investment theoretically should be found by multiplying the amount of each security outstanding by its cur-

rent market price. In practice, however, it is customary always to take bonds at par, and to take preferred stock at par, unless the latter is selling at a substantial discount. For our purposes, it is usually sufficiently accurate to consider the preferred at par, unless it is selling at a discount of 25 per cent or more. In this way, one avoids considerable work as well as the logical difficulties that arise because the market price of the preferred stock is often determined by the specific dividend rate it bears. The same situation exists when one computes the ratio of preferred stock to the market value of net worth. Here the preferred stock may be taken at par, but common stock should always be considered at its current market value.

The second section is devoted in a general way to an analysis of earnings. Here are presented such matters as the relation of earnings to fixed charges and to preferred dividend requirements, earnings on the common stock, and the per cent earned on total investment. It is highly desirable, when analyzing the investment position of bonds and preferred stocks, to consider the protection afforded by assets and by earning power as closely related. For this reason, these two matters are considered in consecutive sections.

The remaining sections are somewhat less definite in scope: the third is used to designate what may be termed "management ratios," such as the operating ratio, inventory turnover, and plant turnover; the fourth is devoted to an analysis of the liquid position of the corporation, while in the last section the market price of common stock, its book value, and current dividends are entered.

Use of analysis card illustrated.—In order to demonstrate the manner in which this card may be used for the purpose of analyzing the financial progress of a corporation over a period of years, the author has prepared a five-year analysis of the United States Steel Corporation. The following table reproduces in full both the data and the ratios for this company for the period 1922 to 1926, inclusive.

A study of the data here contained confirms the generally accepted idea that the securities of this corporation must be regarded as among the first rank of industrial investments. The per cent of capitalization, consisting of funded debt, although moderate, has declined during each of the years studied. The reasons for this tendency are threefold: It has

been possible, on account of conservative dividend policies, to finance necessary additions and extensions out of surplus; the

Fig. 15.—Financial Analysis of United States Steel Corporation, 1922 to 1926, Inclusive (Unit, \$1,000).

YEAR ENDING: December 31	1922	1923	1924	1925	1926
Gross Sales.....	\$1,092,698	\$1,571,414	\$1,263,711	\$1,406,505	\$1,508,076
Operating Expenses.....	1,027,058	1,382,097	1,166,141	1,281,213	1,348,808
Total Income.....	72,146	160,086	125,172	132,373	159,316
Fixed Charges (excl. Fed. Taxes).....	27,492	27,072	26,343	26,006	25,515
Net Earnings (after Taxes).....	39,654	108,017	85,067	90,603	116,667
Preferred Dividend Requirements.....	25,220	25,220	25,220	25,220	25,220
Total Assets (less Offset Reserves)....	2,170,131	2,257,622	2,240,902	2,285,331	2,332,782
Total Investment.....	2,080,377	2,120,218	2,127,571	2,168,411	2,211,660
Funded Debt (and Underlying Sec.)....	571,755	557,985	540,488	537,005	519,574
Preferred Stock.....	360,281	360,281	360,281	360,281	360,281
Common Stock and Surplus.....	1,148,340	1,201,952	1,226,802	1,270,165	1,331,804
Current Assets.....	512,203	588,595	550,621	553,005	580,598
Current Liabilities.....	98,754	137,403	122,059	116,018	121,122
Working Capital.....	413,449	451,192	427,662	436,187	468,476
Property Account.....	1,031,579	1,039,159	1,078,209	1,092,198	1,067,391
Inventories.....	220,707	270,758	285,041	285,677	281,255
Depreciation.....					
Market Value.....					
Total Investment.....	1,457,700	1,458,100	1,490,500	1,509,041	1,585,125
Net Worth.....	918,000	931,000	980,000	1,000,361	1,065,551
Common Stock Equity.....	492,000	501,000	546,000	640,080	705,270

RATIOS

Per Cent Investment in Bonds.....	27.7	26.4	25.6	24.8	23.4
Per Cent Investment in Preferred Stock	17.3	17.0	16.9	16.6	16.3
Per Cent Investment in Com. and Surp.	55.0	56.6	57.5	58.6	60.3
Ratio Debt to Market Value Investment	1 : 2.5	1 : 2.6	1 : 2.8	1 : 2.8	1 : 3.0
Ratio Pfd. to Market Value Net Worth.	1 : 2.6	1 : 2.6	1 : 2.7	1 : 2.8	1 : 3.0
Number Times Charges Earned.....	2.56	7.30	4.75	5.10	6.25
Number Times Preferred Div. Earned..	1.57	4.30	3.38	3.56	4.63
Number Times Charges and Preferred Earned (after Taxes).....	1.17	2.6	2.16	2.66	2.80
Earnings per Share Common.....	2.84	16.4	11.77	12.85	18.00
Per Cent Earned on Total Investment..	3.47	7.38	5.90	6.10	7.30
Operating Ratio.....	95%	89.5%	93.5%	92%	89.4%
Plant Turnover.....	.67	.96	.75	.83	.87
Inventory Turnover.....	4.9	5.9	4.4	4.95	5.35
Ratio Cur. Assets to Cur. Liabilities...	5.2 : 1	4.3 : 1	4.48 : 1	4.75 : 1	4.50 : 1
Working Capital per \$ Total Investment	19.6	21.2	20.5	20.5	21.2
Average Market Price Common.....	96¾	97½	107½	126	138¾
Current Dividends.....	5.00	5.00 & .25	5.00 & 2.00	5.00 & 2.00	6.50 & .50
Book Value per Share Common.....	226	236	241	250	260

presence of rigid sinking fund requirements has facilitated an annual reduction in the amount of bonds outstanding; and the

constantly increasing surplus, which has resulted from the two preceding factors, has naturally reduced the relative amount of total investment represented by funded debt. This same situation applies, in all respects, to the preferred stock. We find also that both bonds and preferred stock are secured by a comfortable margin of equity based on the market value of the common, and that the value of this equity is constantly increasing. In other words, a gradual expansion, financed entirely by surplus earnings, has taken place in this concern during recent years. This situation is encouraging to all security holders and is a decidedly favorable one.

During each of the five years studied, the company earned its charges by a very comfortable margin. In fact, the company averaged during the period to earn its charges by about five times, although figures for the last two years show a more favorable margin. Preferred dividend requirements have likewise been earned by a fair, although less comfortable, margin. Yet, with combined charges and preferred dividend requirements earned on the average 2.3 times, we are warranted in giving the preferred stock a high rating, especially in view of the high asset security and the relatively low business risk which the Steel Corporation enjoys as compared with that of many industrials.

Earnings per share of common have shown a tendency to increase over the period studied and during the first part of 1927 were at the rate of about \$18 a share.⁹ Whereas earnings are customarily reported by the company as shown on the preceding chart, an annual charge, it will be recalled, is made against earnings for sinking fund reserves. Sinking fund requirements, therefore, are considered as an expense. This treatment is used in part as a means of providing for depletion and depreciation. Although detailed entries are not shown, it would appear that a part if not all the sinking fund charges have been credited to contingency reserves. Undoubtedly this is a very conservative method of handling this item. Over a period of years, there is a reasonable possibility that such a treatment results in understating earnings. In any event, it is interesting to note what earnings would have been

⁹ On the old stock before the 40 per cent stock dividend was distributed, May 2, 1927.

if sinking fund charges were considered as credits to a proprietorship reserve.

ADJUSTED EARNINGS OF U. S. STEEL CORPORATION

<i>Year</i>	<i>Reported Available for Common</i>	<i>Sinking Fund</i>	<i>Total Earnings</i>	<i>Adjusted Earnings per Share</i>
1921	\$11,397,340	\$8,863,180	\$20,260,520	\$3.98
1922	14,433,778	9,305,885	23,739,663	4.67
1923	83,487,387	9,724,720	93,212,107	18.35
1924	59,847,515	10,205,169	70,052,684	13.88
1925	65,382,976	10,623,625	76,006,601	14.95
1926	91,447,728	11,049,835	102,497,563	20.16

The ratio of total income to invested capital has been unsatisfactory in this industry since the War, although it has increased during the past three years. In fact, the earnings of 27 leading iron and steel companies, comprising 87 per cent of the country's production in 1925, averaged only 4.51 per cent on their total capital investment as compared to 3.8 per cent in 1924.¹⁰ Some explanation for this low rate of earnings in the steel industry may be found in the history of the industry during and after the War. A substantial extension in plant and equipment was undertaken from 1915 to 1919, with the profits accruing from the War. Upon the recurrence of normal conditions, it was found impossible to employ these facilities to full capacity. However, a readjustment may be expected during the next ten years, as the natural growth in population creates a demand sufficient to enable a more profitable utilization of the assets of the industry. When this takes place the market value of the stock of this company, as well as that of other steel companies, may be expected to increase to a point somewhat closer to book values.

The operating ratio of the company remained at a fairly constant, and rather high, level during the period studied. The ratio of .95 per cent recorded for the year 1922 appears too high. A ratio of 90 per cent, although high, is below the danger zone. Inventory turnover, on the other hand, has remained fairly constant, except for the year 1923, and appears satisfactory.

¹⁰ *Iron Trade Review*, May 20, 1926, pp. 1310-1312.

The ratio of current assets to current liabilities has remained almost constant for the period studied. The current ratio has been consistently maintained at a point above the so-called normal of 2 : 1. The amount of working capital relative to invested capital has likewise remained fairly constant and at satisfactory levels during the period, although it has declined slightly since 1921. The company appears to be adequately supplied with net quick assets.

The book value of the common stock of this company has shown a gratifying increase over the period studied, indicating conservative dividend payments in relation to earnings. The net increase in book values for the period was equivalent to over \$30 per share. One notes a wide disparity between the book value and the market value of the common stock of this company. The reason for this situation is to be found primarily in the low ratio of earnings to total investment, a situation to which attention has already been called.

Common stock, book values, and earning power.—In valuing the common stock of an industrial company, the market places much greater emphasis on per. share earnings than on book values. Accordingly, a wide discrepancy is often found between the market value of stocks and their book values. In some instances, the market value of stock is in excess of its book value, in other cases below. On the other hand, where earnings are sufficient to raise the value of the common stock of a company above the liquidating value of its underlying assets, investors customarily appraise the stock by capitalizing earnings at a rate which expresses the risk involved in the concern under consideration. The rate at which the earnings of one concern should be capitalized will, therefore, vary from the rate used in connection with another company according to variations in investment risk. As between points of time, also, average rates of capitalization may be said to vary in accordance with fundamental market conditions.¹¹ The average ratio of earnings to the market price of representative industrials based on annual data for the years 1915 to 1925, inclusive, varied as follows:

¹¹ For a further discussion of methods of valuing common stocks of industrials, securities, and rates of capitalization, see Badger, R. E., "Valuation of Industrial Securities," Chapters XI and XII, 1925, Prentice-Hall, 70 Fifth Ave., New York.

RATIO EARNINGS TO MARKET VALUE COMMON STOCKS*

(From 12 to 20 Companies Used in Dow-Jones Index)

Year	Ratio	Average Yield on Dividend Basis
1925	9.68%	5.77
1924	11.58	6.32
1923	12.30	7.11
1922	8.77	6.06
1921	4.34	7.71
1920	12.06	6.95
1919	11.89	6.29
1918	20.00	11.73
1917	26.73	12.05
1916	28.01	7.92
1915	13.19	4.80

* The *Wall Street Journal*, October 20, 1925, p. 10. Based on computations made by the author the ratio of earnings to price for 306 industrial stocks in 1927 was 8.19%; of dividends to price, 4.88%.

The stock of the United States Steel Corporation had a rather spectacular rise during 1926 from a low of 117 to a high of 160½ a share. Quite independent of the possibility of a stock dividend arising from the large surplus carried on the books of the company, this rise was undoubtedly stimulated by the increase in earnings which advanced in 1926 to \$18 from a figure of \$12.85 for the previous year. The stock of this company, normally, should sell close to ten times its true per share earnings. This does not mean that in years of severe depression and very low earnings the price will drop accordingly, nor that the price will fully reflect abnormal earnings in especially good years. Granted that the performances of the company in 1926 and during the previous several years indicated an earning capacity of \$14 or \$15 a share, a price of \$160 appears reasonable under conditions as they existed in 1926. The course of subsequent earnings will naturally determine whether the price of this stock will advance or decline, during the next few years.

In summarizing our analysis of this company, we may conclude that its securities should be classed as excellent industrial investments. All the company's significant financial ratios have moved in the proper direction during the period studied, while, in 1926, without exception, they compared very favorably with those previously suggested as normal for industrial concerns. Our conclusion in these respects is further supported by the very strong position which the company occupies in its field, as well as by the excellent past history which it enjoys.

We should be compelled to rate its bonds and preferred stocks very high as strictly investment issues, while its common stock deserves to be classed as a conservative stock investment, with excellent opportunities for profit if held over a period of years.

Suggested method for comparing a group of selected companies.—Another possible use to which the type of analysis already suggested may be put involves a comparison of the ratios of a selected corporation with the combined ratios of a group of selected corporations in a similar line of business. Assume, for example, that it was desired to compare the United States Steel Corporation with other steel companies. An analysis might be prepared similar to the one just presented for a group of leading steel companies and ratios for a given company compared with those of the other companies, or the data might be combined for the entire group and a composite set of ratios for the group as a whole worked out. In this way it could be determined which companies stood out as the most conservatively managed and which were in the most desirable financial condition.

Purely for illustrative purposes the following study is presented, which covers four selected motor companies for the years 1923 to 1925, inclusive. This analysis was prepared by the author early in 1926 and was used as the basis for his recommendations to clients who sought information relative to possible motor stock investments at that time. The disadvantage of reproducing a study of this kind is that it is out of date almost before it is published. On the other hand, it will serve to illustrate the manner in which comparative ratios can be used to advantage.

In the following table are presented full data and corresponding ratios based on the combined statements of the General Motors Corporation, Nash, Packard, and Studebaker.

Group data examined.—A cursory examination of the group, or combined data for these four companies, brings out several very interesting points. The most significant is the complete absence of any funded debt among the group. Further, preferred stock constitutes only a small part of the total book investment of these companies. Both of these facts emphasize the conservative capital structure frequently found among automobile manufacturing companies. This situation, no doubt, is attributable largely to the high investment risk found in the industry.

Another matter of interest is the very high ratio of earnings to investment found among successful automobile manufacturers. The earning power of invested capital here is ex-

Fig. 16.—Comparative Financial Analysis of General Motors Corporation, Nash, Packard, and Studebaker, 1923, 1924, 1925 (Unit, \$1,000).

YEAR ENDING:	1923	1924	1925		
Gross Sales.....	\$977,863	\$806,417	\$1,058,247		
Operating Expenses.....	867,521	725,130	892,622		
Total Income.....	98,772	74,103	151,552		
Fixed Charges.....	None	None	None		
Net Earnings.....	98,772	74,103	151,552		
Preferred Dividend Requirements.....	9,763	10,111	9,958		
Total Assets.....	739,366	737,234	833,831		
Total Investment.....	620,492	642,531	679,383		
Funded Debt.....	None	None	None		
Preferred Stock.....	148,953	145,025	135,753		
Common Stock and Surplus.....	471,539	497,507	543,630		
Current Assets.....	325,311	321,354	414,140		
Current Liabilities.....	106,770	77,143	145,461		
Working Capital.....	218,541	244,211	268,679		
Property Account.....	292,396	295,393	281,655		
Inventories.....	182,803	141,794	157,912		
Depreciation.....	Not Available				
Market Value.....					
Total Investment.....	590,285	591,662	948,374		
Net Worth.....	590,285	591,662	948,374		
Common Stock Equity.....	441,332	446,637	812,620		

RATIOS

Per Cent Investment in Bonds.....	None	None	None		
Per Cent Investment in Preferred Stock	24.0	22.6	20.0		
Per Cent Investment in Com. and Surp.	76.0	77.4	80.0		
Ratio Debt to Market Value Investment	No Debt	No Debt	No Debt		
Ratio Pfd. to Market Value Net Worth.	1 : 3.96	1 : 4.08	1 : 6.98		
Number Times Charges Earned.....	No Charges				
Number Times Pfd. Dividend Earned..	10.12	7.33	15.22		
Number Times Charges and Pfd. Earned	(No Preferred Div.)				
Earnings Per Share Common.....	Not Significant				
Per Cent Earned on Total Investment.	15.92	11.53	22.31		
Operating Ratio.....	88.7	89.9	84.3		
Plant Turnover*.....	3.34	2.73	3.93		
Inventory Turnover*.....	5.3	5.7	6.7		
Ratio Cur. Assets to Cur. Liabilities...	3.0 : 1	4.2 : 1	2.8 : 1		
Working Capital per \$ Total Investment	.352	.380	.395		
Average Market Price Common.....	} Not Significant for Group				
Current Dividends.....					
Book Value per Share Common.....					

* Based on year end figures.

ceptionally high among successful concerns. It must be recalled, however, that business mortality has also been very high in this industry. Within the past ten years a severe struggle has been going on from which only a relatively few

concerns have survived. These successful concerns, on the other hand, have shown a very satisfactory earning power, although losses among the less successful might conceivably give a low ratio of earnings to invested capital for the group as a whole if included in a study of this kind. This is nothing more nor less than the working of an old principle that the chance of large gains will attract investors, although the chances of failure in the industry as a whole may actually exceed the possibility of gain. In any event, for the concerns included in our study, the earning ratio is exceptional.

One notes also a fairly high ratio of working capital to total investment. For \$100 of invested capital one finds between \$35 and \$40 of net quick assets. Furthermore, this ratio has increased during the past three years. Such conservatism may be accounted for partially by the desire of these companies to maintain their affairs in a state of liquidity, in order to meet the sudden reverses to which the industry is subjected, and partially to provide for the financing of constant changes in models, a factor which has characterized the motor industry during the past ten years.

Comparison of individual companies with group data.—We will next undertake to make a comparison of the ratios for each of the four companies under consideration with ratios for the combined group. In this connection we will omit the actual data as unnecessary and present only the significant ratios. These will be arranged under the section headings already presented, the group ratios and those for each company being given under each heading.

INVESTMENT RATIOS—SELECTED AUTOMOBILE COMPANIES—

		1923, 1924, 1925		
	Ratio	1923	1924	1925
% Investment in Bonds.....		(none for group)		
% Investment in Preferred Stocks				
Group		24.0	22.6	20.0
General Motors		25.2	24.4	22.6
Nash		60.0	48.6	23.1
Packard		29.9	24.4	23.6
Studebaker		8.0	7.4	6.9
% Investment in Common and Surplus				
Group		76.0	77.4	80.0
General Motors		74.8	75.6	77.4
Nash		40.0	51.4	76.9
Packard		70.1	75.6	76.2
Studebaker		92.0	92.6	93.1

Ratio	1923	1924	1925
Ratio Debt to Market Value Investment.....	(none for group)		
Ratio Preferred to Market Value Net Worth			
Group	1: 3.96	1: 4.08	1: 6.98
General Motors	1: 3.84	1: 3.88	1: 6.02
Nash	1: 2.64	1: 3.75	1: 12.57
Packard	1: 3.06	1: 3.78	1: 7.54
Studebaker	1: 10.59	1: 9.57	1: 13.91
Number Times Fixed Charges Earned.....	(none for group)		
Number Times Preferred Dividends Earned			
Group	10.12	7.33	15.22
General Motors	9.01	6.23	13.94
Nash	7.68	8.41	15.46
Packard	6.88	4.21	17.75
Studebaker	28.72	23.15	28.69
Number Times Charges and Preferred Dividends Earned	(No charges for group)		
Earnings per Share Common (per share earnings not useful for group comparison purposes)			
% Earned on Total Investment			
Group	15.92	11.53	22.31
General Motors	14.20	10.07	21.86
Nash	35.48	30.08	46.82
Packard	18.49	11.92	29.55
Studebaker	16.96	12.12	14.28
Operating Ratio			
Group	88.7	89.9	84.3
General Motors	90.0	91.0	84.0
Nash	81.5	81.0	81.0 (Est)
Packard	84.0	91.0	84.0
Studebaker	87.6	88.6	88.5
Inventory Turnover			
Group	5.30	5.70	6.70
General Motors	5.04	5.68	6.55
Nash	12.00	13.00	13.50
Packard	4.43	4.13	6.67
Studebaker	6.24	4.53	5.53
Ratio Current Assets: Current Liabilities			
Group	3.00: 1	4.20: 1	2.80: 1
General Motors	2.78: 1	4.42: 1	2.67: 1
Nash	3.78: 1	3.29: 1	3.55: 1
Packard	5.46: 1	8.39: 1	3.42: 1
Studebaker	3.17: 1	3.04: 1	3.24: 1
Ratio Working Capital: Total Investment			
Group .....	.352	.380	.395
General Motors .....	.311	.279	.268
Nash .....	.800	.804	.880
Packard .....	.528	.550	.506
Studebaker .....	.286	.291	.304
Book Value per Share Common Average Market Common Current Dividends (Not useful for comparative purposes)			

Interpretation of data.—A comparison of the capital structures of these four companies for the period studied shows that the Studebaker Company occupied the most conservative position, although this advantage is of slight significance in the present case. All four companies, in fact, were capitalized along very conservative lines, in that none had any funded debt, while preferred stock, except in the case of the Nash Company, represented only a very small part of total capitalization.

In respect to earning power, on the other hand, the Nash Company takes the lead. This company also enjoyed the lowest operating ratio, the highest inventory turnover, and the strongest cash position. One also observes that the Nash Company consistently reduced the proportionate amount of preferred stock outstanding during the three-year period studied, a fact of no small importance to the common stock owner.

Little distinction can be made among the remaining three companies—General Motors, Packard, and Studebaker—in respect to earning power, inventory turnover, and liquidity. The average performance of General Motors, in these respects, was perhaps a shade below that of the other two companies, but its predominating position in the industry would certainly serve more than to offset this as a practical matter.

Our study up to this point has indicated that the Nash Company was the best performer, during the three years covered, with little choice among the other three companies, although the matter of size favors the General Motors Company. The preferred stocks of any of the companies might be considered a satisfactory investment as industrial preferred stocks go. On account of its size and position in the industry, preferred or debenture stock of the General Motors might be given first position, with Nash second on account of its satisfactory growth. In the present case, however, interest naturally centers on the relative merits of the common stocks of these companies. The proper selection in this respect, however, requires us to pursue our inquiry somewhat farther in an effort to determine which of these stocks could have been purchased on the most favorable terms at the time when the commitment was under consideration.

Further data, need of, for common stock comparisons.—We will assume, for purposes of discussion, that we were contemplating an investment in common stocks of motor companies during the first week of January, 1926, and expected to make our choice from the four companies here analyzed. We must again caution the reader that the purpose of this study is not so much to enable one to predict current fluctuations in the market as to enable the investor to select securities that may safely be held over a period of time, with the expectation of receiving a satisfactory current return and future appreciation. Therefore, we are interested in the basic conditions as indicated by the preceding study, as well as by the comparative basis on which the stock of a given company may be purchased at any given time. The following table will indicate the comparative prices at which the common stocks of these companies were selling during the first week of January, 1926, in respect to earnings, book values, and cash dividends:

EARNINGS, BOOK VALUES, DIVIDENDS, AND AVERAGE PRICES—
COMMON STOCKS

(Selected Motor Companies)

Company	Three-year 1925		1925 Book Val. per Share	1925 Div.	Av. Price 1st Week Jan., 1926	Ratio Earn. to Market Price	Cur- rent Div. Yield
	Av. per Share Earnings	Earnings per Share					
General Motors ..	\$12.39	\$19.15	\$68.73	\$7.00	\$123	15.6%	5.70%
Nash	38.41	55.70	97.73	16.00	463	12.0	3.46
Packard	2.98	4.84	16.37	2.00	42½	11.3	4.70
Studebaker	8.34	8.55	47.25	5.25	58½	14.6	9.00

General Motors common was selling at this time at the lowest price in relation to earnings per share, and Studebaker common at the lowest price in relation to current dividends and book values. Nash common, on the other hand, was selling at the highest price in relation to dividends and book values, and nearly as high as Packard in respect to earnings.

Whereas it is true that the Nash Company was the best performer of the group, it is doubtful whether this factor should far outweigh the stability afforded General Motors by reason of its predominant position in the market. General Motors could have been purchased on a basis about as favorable as Studebaker, and on a more favorable basis than either Packard or Nash. In view of these facts, as well as of the

excellent condition evidenced by our comparative study, General Motors common would appear to have been the most logical purchase on or about January, 1926.

Further methods of analysis: use of "per spindle" data in textile industry.—In addition to the more or less general analysis so far suggested in respect to industrials, it is often possible to work out more specific lines of inquiry that are adapted to particular industries. In the case of cotton textile mills, for example, it is possible to work out statistics on a "per spindle" basis for comparative purposes. When this is done, however, it is necessary to classify the mills which are being studied. For example, some mills do nothing but spin, others do both spinning and weaving, while still others do both spinning and weaving and operate their own finishing plants as well. In using the "spindle" as a basis of comparison, therefore, it is important to compare mills similarly situated and with somewhat similar equipment.¹² With this word of caution we shall discuss briefly some of the various comparisons that may be worked out on a "per spindle" basis.

Let us consider first the question of market prices "per spindle." By obtaining the prices of the various securities of the mill, it is possible to determine the price which the market places on the property, reduced to a "per spindle" basis. In the various illustrative data to be presented in this connection, it is assumed that there is only one class of stock outstanding, and that the corporation has no bonds outstanding. This is in substantial accord with the situation in New England, at

¹² The following table will serve to illustrate the differences in costs for mills with different types of equipment:

ESTIMATED PER SPINDLE COST OF COTTON MILLS

Type of Mill	1912 to 1914	1919 to 1920	1923	1927
	1914	1920	1923	1927
Ordinary Weaving Mill with Plain Looms..	\$20.00	\$50.00	\$45.00	
Ordinary Weaving Mill with Automatic Looms	23.00	55.00	50.00	\$45.00
High Grade Yarn Mill with Combers and Twisters	30.00	70.00	62.00	
Tire Fabric Mill	35.00	90.00	75.00	

Silk equipment adds from 10 per cent to 15 per cent to above prices.

Bleaching and finishing add from 15 per cent to 20 per cent to above prices.

Mill villages add from 15 per cent to 20 per cent to above prices.

least, where practically all cotton mill financing has been done with common stock only or with common and preferred stocks. In order to illustrate how the market price "per spindle" may be obtained for a typical mill, let us assume that it has outstanding 60,000 shares of stock (this being the only outstanding security), and that the market value of this stock is \$63 a share. This mill, we will further assume, is equipped with 236,500 spindles. It is apparent that the market value of the entire investment is \$3,780,000. This supposes a gross valuation of \$16 per spindle.

It is possible, however, to refine the analysis somewhat at this point. It is evident, on second thought, that the valuation of \$16 per spindle previously suggested represents the market valuation of both plant and "net quick" assets. If, now, we deduct "net quick" assets at par from our total valuation of \$3,780,000, assuming these to be carried at \$1,618,860, we get a valuation of \$2,161,140 for the plant alone. This is equivalent to a value of \$9.14 "per spindle" put on the plant, exclusive of "net quick" assets. Another way of arriving at this figure is first to compute the total market value "per spindle" for the entire business, then to ascertain "net quick" assets per spindle and subtract this from the total "per spindle" valuation.

An analysis of this nature is not especially significant when applied to a single mill, but when a group of mills is studied some very interesting comparisons are possible. The following table illustrates the way in which "per spindle" data may be used in studying cotton mills. Five New Bedford mills were selected for this study, all of which are more or less similarly situated. Balance sheet data is compared with the prices of the stocks on or about June 1, 1926.

DATA FOR FIVE SELECTED NEW BEDFORD MILL STOCKS

(Based on Year 1925*)

<i>Mill</i>	<i>Net Quick Assets</i>	<i>Shares Stock</i>	<i>Spindles</i>	<i>Market Value per Share June, 1926</i>	<i>Average Earnings 1920-1925 Inclusive</i>	<i>Net Plant Account Book Value</i>
Acushnet	\$1,489,296	20,000	114,240	\$82.00	\$255,394	\$1,703,075
Butler	540,990	23,000	155,000	64.00	288,050	2,267,540
Kilburn	2,501,237	22,500	126,464	115.00	417,368	1,556,701
Wamsutta	1,618,646	60,000	236,000	63.00	454,954	5,382,362
Whitman	1,187,495	30,000	177,608	90.00	355,136	2,369,039

* Data for this table were furnished through the courtesy of Sanford & Kelly, Brokers, Fall River and New Bedford. Computations, however, were made by the author.

DERIVED INFORMATION ARRANGED FOR COMPARATIVE PURPOSES

(Five New Bedford Mills, 1925)

Mill	Total Market Value per Spindle	Net Quick per Spindle	Market Value Plant per Spindle	Average Earnings per Spindle	Average Ratio Earnings to Share Market Value	6 Year Average Earnings to Market Value
Acushnet	\$14.36	\$13.04	\$1.32	\$2.24	\$12.75	15.5%
Butler	9.50	3.50	6.00	1.85	12.52	19.5
Kilburn	20.46	19.78	.68	3.30	18.55	16.1
Wamsutta	16.00	6.85	9.15	1.92	7.58	12.0
Whitman	15.20	6.68	8.52	2.00	11.84	13.2

The preceding table reveals certain interesting information. The first matter that strikes one's attention is the very high ratio of average earnings to market value and the very low per spindle values placed on the plants of these mills.¹³ The reason for this, of course, is to be found in the low state of prosperity experienced by the entire industry at the time this study was made, especially in New England. It is now possible to determine which of these stocks was selling on the most favorable basis in respect to earnings and spindles. This may be facilitated by the following schedule with accompanying notations:

COMPARATIVE PRICES ON "PER SPINDLE" AND EARNINGS BASIS

(Five New Bedford Cotton Mills, 1926)

ORDER IN WHICH STOCKS SOLD

Mill	On Basis of Spindles (in reverse order)	On Basis of Earning
Acushnet	2	3
Butler	3	1
Kilburn	1	2
Wamsutta	5	5
Whitman	4	4

It appears from this study that the stocks of the Kilburn Mills were selling at the lowest price in relation to the number of spindles and net quick assets per spindle, and second lowest

¹³ Compare with cost table presented on p. 340. All of these mills do both weaving and spinning. In making analyses of this kind, no reference is made to looms or other equipment of a complementary nature, for the requirements per spindle for accessory equipment, such as looms, etc., is more or less standard in the textile industry.

on the basis of earnings. The highest priced stocks at that time appeared to be those of the Wamsutta Mills, with the Whitman Mills next in order.

While this study is not conclusive evidence of the relative cheapness of the stocks of these mills, in June, 1926, it, nevertheless, is suggestive. Unquestionably the investigator should know something of the management and physical condition of the mills, as well as the course of earnings during the past several years. If one examines the annual record of earnings of the Butler Mills, for example, he will note that the mill showed a deficit in 1924 and that earnings were only \$11,335 in 1925, which was far below the five-year average. The Whitman and Wamsutta Mills, on the other hand, had behind them a long record of successful operation and the management had an established and enviable reputation, which may account for their presence at the other end of the table. Statistical analysis at best is only a part of the entire work of selecting investments.

Special methods of analysis applicable to sugar companies.

—Another example of the way in which a general study may be pursued somewhat further is found in the sugar industry. Here it is customary to reduce many statistics to a "per bag" basis for comparative purposes. By the "per bag" capitalization or market price of sugar companies is meant the capitalization of the company, or the market price of its total investment divided by the number of bags of productive capacity of the company. It is necessary, when making studies of this nature, to determine first the size of the bag used by the company before its production statistics are of any value. Cuban raw sugar is generally shipped in bags of 320 pounds, seven bags making a "long ton" of 2,240 pounds. Porto Rican sugar is generally shipped in bags of 250 and 310 pounds, the latter size being used by most of the large companies. Hawaiian sugar is shipped in 125 pound bags, Philippine sugar in 125 and 150 pound bags, and American beet sugar (all refined) is packed in bags of 100 pounds each. If one is comparing a group of Cuban companies or a group of Porto Rican companies, it is possible to use the "per bag" basis without adjustment, provided all companies within the group use the same sized bags for shipment. When comparing Cuban companies with Porto Rican companies, on the other

hand, it is often safer to reduce all statistics to the basis of 100 pounds production capacity.

In reducing capitalization and operating statistics to a "per bag" or "per pound" basis in the case of sugar companies, one again derives a common denominator or unit of comparison. There is a certain similarity of conditions throughout the industry in a given area that justifies this method, whereas the most convenient denominator is a unit of productive capacity here, as was the spindle in the cotton industry.

In order to demonstrate the practical way in which a comparison of this kind may be made, there is presented below a short statistical study of two leading Cuban companies—the Cuban American and the Cuba Cane Corporation.¹⁴

ORIGINAL DATA FOR COMPARATIVE ANALYSIS

Company	CAPITALIZATION, IN \$1,000'S			Three-year Average Production, in Bags (320- 325 lbs.)	Three-year Average Earnings	Market Value Investment, in \$1,000's, 1926 Average *	Net Quick Assets, in \$1,000's
	Bonds	Stocks and Surplus	Total				
Cuba Cane	\$34,908	\$66,604	\$101,512	4,142,805	\$2,238,752	\$61,408	\$13,361
Cuban American . .	8,850	34,518	43,368	1,970,257	3,076,007	42,164	19,190

DERIVED DATA, CUBA CANE AND CUBAN AMERICAN COMPANIES

Company	Book Capitalization per Bag	Net Quick per Bag Production Capacity	Market Value Investment per Bag Production Capacity	Ratio of Average Earnings to Market Value of Stock Equity, 1926
Cuba Cane	24.50	3.23	14.82	8.4%
Cuban American . .	22.00	9.74	21.40	9.2%

* Based on bonds at par preferred and common at 1926 average price.

The preparation of "financial analysis" cards for these two companies would show the Cuban American Company to have been in a somewhat stronger position than the Cuba Cane Company at the end of 1926. The above study adds further support to other evidence concerning the relative strength of the two companies.

¹⁴ Statistical data derived from "Manual of Sugar Companies," 1927, Farr & Co., N. Y.

Wherever an industry operates under more or less uniform conditions, that is, where operating conditions are sufficiently similar to permit the use of some common denominator, such as the spindle in the cotton industry, the "per bag" productive capacity in the sugar industry, the "per ton" productive capacity in the steel industry, or the "per pound" unit in the copper industry, it is desirable to carry investigation beyond the scope outlined in connection with the "financial analysis" card. Where various statistics are worked out on the basis of some common denominator, a more precise study of values can be made than is possible from a purely financial analysis.

CHAPTER XV

PUBLIC UTILITIES—GENERAL

Customary grouping of investments, inadequacy of.—The customary grouping of investments into the four distinct classes—government and municipal, railroad, public utility, and industrial—is not entirely logical, even though custom and usage recommend its adoption. Railroads, for instance, are no less a public utility than are electric light and power, gas, and electric railway companies, yet a separate classification is given to steam roads. Furthermore, the term “public utilities,” as now used, includes such diverse industries as the electric light and power, artificial and natural gas, telephone and telegraph, private water companies, and electric railways. From the standpoint of investment, there are wide differences among these groups. Electric light and power investments as a class warrant a high rating at the present time (1928), while the securities of electric railway companies are in decidedly lower standing. One, therefore, cannot rest content with the statement that all public utility investments are desirable.¹

Common characteristics of public utility enterprises: public control.—Despite the apparent dissimilarity among various public utility industries, there are also certain points of similarity. This statement applies to the steam railroad as

¹ Some idea of the relative importance of certain public utility industries may be gained from the following estimates of total investment in 1926 in the industries specified:

Light and Power Companies.....	\$9,184,000,000
Street Railway Companies	4,390,000,000
Telephone Companies	3,289,000,000
Gas Companies	1,982,000,000

These estimates, made by “Moody’s Investors Service,” were based on estimated securities outstanding, bonds and notes being taken at their par values and stocks at their market values. “Moody’s Manual of Public Utilities,” 1927, p. xviii. These estimates vary slightly from other sources quoted in this book by reason of taking stocks at market values.

well as to those businesses which are spoken of as strictly utilities. These common characteristics may be grouped under four headings:

1. Concerns in the public utility field perform a particularly important service. In legal cases they are spoken of as businesses "affected with a public interest." While it is true that all business is charged in some way or other with a public interest, it is felt that so-called utilities supply commodities or services which are closely associated with the public welfare.²

2. They operate under conditions which tend toward monopoly. This tendency may be due to the operation of the economic law of increasing returns, or to the excessive cost of duplicating plant and equipment.

3. They enjoy special legal privileges. (a) They often operate under franchises which give them the right to use public highways. (b) They are accorded the benefits of the state's right to acquire property under eminent domain.

4. Finally, they perform services which are sometimes recognized as the functions of government (consider, for example, the furnishing of water to a community).

An important corollary to the preceding is the fact that public utilities are subject to regulation. Such regulation is exercised through the common law, by franchise restrictions, and by legislative enactment as well as through positive control by means of administrative commissions.³ It is this fact

² The legal distinction between property devoted to public, as opposed to private, use has long been made in common law. A clear enunciation of this distinction is found in the opinion of the Supreme Court in the case of *Munn v. Illinois*, in which the right of the state to establish the charges which a grain elevator could make was upheld "... we find that when private property is 'affected with a public interest, it ceases to be *juris privati* only.' ... Private property does become clothed with a public interest when used in a manner to make it of public consequence, and affect the community at large. When, therefore, one devotes his property to a use in which the public has an interest, he, in effect, grants the public an interest in that use, and must submit to be controlled by the public for the common good, to the extent of the interest he has thus created." *Munn v. Illinois*, (1876) 94 U. S. 113.

³ There are different theories as to the basis for such legal control. These theories fall into the following groups:

1. The right to control inheres in the public because of the governmental character of the service rendered.

2. The public acquires the right to control by virtue of the grant of special privileges.

3. The monopolistic character of the industry justifies public control as a means of protection.

as much as any other that differentiates public utility and railroad investments from those of so-called private corporations. It is important, therefore, for the investor to consider at some length the nature of the control exercised over public utility companies, particularly in so far as such regulation affects his problem.

The franchise explained.—Public utility companies almost universally operate under a franchise. The franchise is a contract between the public and the corporation. In it are set forth the special privileges accorded the company in respect to the right to use public property, the right to acquire property under eminent domain, assurance that no other companies will be granted similar rights, and the length of time for which the franchise runs.⁴ The corporation, on the other hand, agrees to maintain in the interest of the public regular service, frequently agrees to certain payments for the use of public property, and, in general, accepts its obligations as a public service enterprise.

The practice of granting franchises to public utilities has undergone revision during the present century along with other aspects of public utility economics and regulation. Originally, through special enactment, legislatures granted to public service corporations the right to exist and to perform certain business. (These rights are now generally conveyed through a charter, sometimes referred to as "the general franchise.") Under the special enactments the public service corporation was also granted the right to use streets and highways, to erect poles, to lay gas mains, and so on. (These latter rights are now conveyed through the special franchise, usually referred to as "the franchise.") Somewhat later general corporation laws were passed under which charters might be granted by state administrative agencies, while, for the most part, special franchises, which carried the right to use streets and highways, were placed within the jurisdiction of municipalities, either by general municipal corporation laws or by special municipal charters. In fact, many state constitutions now specifically provide that no franchise giving the use of streets and highways may be granted without the consent of local authorities.

⁴ In view of the exclusive rights given to the utility company, it often agrees to maintain certain service standards and to extend its facilities to meet new demands.

The advent of effective commission control over utilities has resulted, in many cases, in giving the regulatory commission the power of review over the acts of municipal bodies in granting franchise rights.

The conditions of the franchise under which a utility operates is of special significance to the investor. Quite naturally, one of the most important features of the contract pertains to the term or the length of time the franchise has to run. Many of the very early grants, which were secured through legislative acts, were without express limitation. In such cases the courts have held them to be perpetual.⁵ The same situation applies to many of the earlier municipal grants. In fact, where these earlier grants did run for a specific length of time, the period was very long—99 or 999 years in many cases.

The experience of municipalities with these long grants was not entirely satisfactory and public sentiment quickly changed. In fact, some state constitutions now prohibit perpetual grants, or else limit the life of all grants to a comparatively short period, say, from twenty-five to fifty years. These short time grants, however, have proved highly unsatisfactory to utility companies, and are particularly obnoxious to the investor. Public utility property is largely fixed and cannot easily be moved. The company, therefore, is at a decided disadvantage in the negotiations which take place at the expiration of the franchise. The company, except for the possibility of an appeal to the courts, is required to accept the terms offered by the city. What else can it do? It cannot profitably refuse to operate, nor can it close up and go out of business. In fact, city officials have not infrequently taken advantage of their strategic position and insisted on such radical concessions as to make future operations unprofitable.

The most satisfactory solution so far found to the franchise situation is in the so-called terminable permit. The essential feature of this type of contract is the continuance of the grant, so long as the utility furnishes adequate service at reasonable rates, or until the municipality purchases the property under certain prearranged terms which give adequate protection to

⁵ *Re Denver Tramway Co.*, 3 Fed. (2d) 285; *Elec. Ry. Jour.*, Dec. 20, 1924, p. 1057.

the investors of the company. Under such a form of contract the recurrent controversies over the terms of renewal are avoided, and new financing can be undertaken without the liability of loss.

Out of this form of grant has developed the so-called service-at-cost franchise, which has been used more especially in connection with street railway companies.⁶ Under such franchises it is so arranged that charges for service shall always meet the cost of service rendered as closely as possible, costs including operating expenses, all taxes, provision for permanent upkeep, cost of municipal supervision, and a return on the established value of the property.

The operation of such a plan requires a proper valuation of the utility company, a definite understanding of what shall be included in expenses, and the predetermination of a rate of return. The original Chicago grants provided that a return of 5 per cent should be allowed on the capital value of the company plus 45 per cent of all profits remaining so long as the fare was 5 cents. Cleveland originally allowed a 6 per cent return on that part of the capital represented by stock, and actual interest requirements on the balance. In Dallas, Texas, the return varies from 7 to 9 per cent.

The state of Massachusetts has gone a step further in the Boston Elevated Act, by guaranteeing a specific return on property investments.⁷ This act authorizes increases in fares at stated intervals to provide for increased cost of service. However, if revenues during the interim are insufficient to meet the full cost of service, the trustees may call upon the state treasury for sufficient funds to meet the deficit. This deficit is then assessed against the cities served in proportion to their use of the service.

⁶ The following cities have adopted this type of franchise in one form or another (see Nash, "The Economics of Public Utilities," 1925, p. 35):

Chicago, Ill.
Cleveland, Ohio.
Kansas City, Mo.
Dallas, Texas.
Montreal, P. Q.
Grand Rapids, Mich.

Cincinnati, Ohio.
Youngstown, Ohio.
Memphis, Tenn.
Toledo, Ohio.
Rochester, N. Y.
Louisville, Ky.

⁷ See Chapter 288, Special Acts of 1918. For further discussion of this act, see p. 439.

A provision is commonly included in service-at-cost franchises, under which the municipality reserves the right to purchase the property at a price to be determined. Generally, this option becomes effective only after a certain number of years of private operation, and is designed as a protection against continuously unsatisfactory operation. The price at which such a purchase may be made, or a basis for its determination, is usually specified in the contract. In this way the investor knows in advance what he may expect to receive, in the event of a purchase, and can govern his actions accordingly.

In the purchase of public utility stocks and bonds it is, of course, necessary to ascertain the franchise conditions under which the utility company operates. Companies which operate under short term franchises present a real investment risk and should be avoided, unless it is well known that the local officials and population are well disposed toward the company. Likewise, corporations operating under terminable franchises in localities which are apt to insist on unreasonable performances are not entirely satisfactory as investment media. The most satisfactory situation from an investment standpoint is a company operating under a long term franchise which grants the existing corporation a monopoly in the territory, or a company operating under a terminable or service-at-cost franchise in a locality which adopts an enlightened attitude toward its public problems.⁸

Public utilities, monopolistic tendencies, control of.—In the earlier period of public utility development, competition was relied upon as the best protection against excessive rates and inadequate service. Duplicate telephone systems, electric light plants, and gas companies were stimulated by the ease with which franchises could be secured from local legislative bodies and capital obtained from the community.⁹ During

⁸ The student will find a particularly good selection of readings on the franchise question in *Lagerquist*, "Materials for the Study of Public Utility Finance," pp. 14 to 32, 1926, A. W. Shaw Co., Chicago. See also Nash, "The Economics of Public Utilities," Chapter III, 1925, McGraw-Hill Co., New York.

⁹ The history of public utility enterprises has been referred to as comprising the eras of (1) invention, (2) exploitation, and (3) regulation. Freeman, W. W., "Evolution of Public Utilities," Investments Bankers' Association, *Annual Report*, 1916. The era of competition coincided with that of exploitation. Gradually competition proved inadequate as a regulator for the industry and regulation was substituted.

this period the relations which the utility companies bore to the community were not regarded as sufficiently different from those of private economic enterprises to require a different attitude, either on the part of the entrepreneur or of the public. Entrepreneurs and promoters felt entitled to organize, to capitalize, and to run their businesses in the manner which best served their own interests and to make such profits as they could. It was generally felt that the hazards which were involved in engaging in the business were no more than offset by the chances of profit.

The economic law of increasing returns, however, operates in the public utility field with greater force than in many other industries. One electric railway company can serve a community at a lower aggregate cost than can several, and with much better results. Great economic waste results from having two sets of gas mains and two plants in a given community, or two electric lighting systems. Even in the telephone industry, where large scale operation does not necessarily reduce unit costs, one must consider the waste of duplicating facilities. In general, one may safely say that it is uneconomical to duplicate a given plant, such as electric light and power, gas, or railway, until the existing plant is able to operate at maximum capacity. The same applies, of course, to the steam railroad industry. Until one road is able to operate at maximum capacity, a second road results in a social loss of capital.

The entire matter may be restated in a somewhat different way. Let two utility companies operate in the same territory without regulation, and cutthroat competition, consolidation, or a pooling of interests results within a very short time. In the event that consolidation or a pooling of interests does not result first, cutthroat competition occurs. The reason for this is the operation of the so-called law of increasing returns. Where two companies are operating in a community, it generally happens that neither plant can operate at maximum capacity. This means that either plant can take on additional business so long as operating costs alone are met and a small contribution is made toward indirect costs. After the original investment has been made in an enterprise, say, an electric light plant, indirect costs continue, quite irrespective of the amount of business done. If such a plant is operating at, say,

one-half or two-thirds capacity, it is possible to take on additional business at a price for service which little more than covers the out-of-pocket expenses incurred in furnishing such service. It is true that all its business could not be handled at such prices, otherwise revenue would be inadequate to meet total cost, including overhead. Yet it is also true that at any time *additional* service can be so priced. Thus, where there are two plants, both competing in a given area and neither operating at capacity, there is a strong incentive for each to seek additional business at a price slightly below the prevailing rate. The other company is then forced to meet this price and eventually the lower price becomes the prevailing one. Sooner or later one of the companies goes out of business, consolidation results, or a pooling of interests is effected. Actual competition, where it is maintained for any length of time, becomes a fight to the finish.

Thus, while competition originally appeared to offer protection to the public, it soon proved inadequate. For, once the surviving company had acquired the competing facilities, it proceeded, quite naturally, to collect from the public a return on its total capital outlay, including the cost of acquiring the duplicate properties. In this way, the public, sooner or later, was made to absorb the burden of the uneconomical construction program that was originally sponsored as a protection against exorbitant rates. It is impossible, therefore, to rely on the ordinary forces of competition to regulate rates and service. The only alternative is some sort of public control, by which the public may be protected against inadequate service or unreasonable rates. The courts, therefore, have universally upheld the old common law principle that public service enterprises are subject to public control in the operation of their business.

Public utilities and the right to judicial review.—There is of course another side to the entire question of regulation. What protection have the utilities against inadequate rates? What is to prevent the legislative or administrative body, charged with regulation, from establishing rates that are unremunerative to the company, and which fail to yield to the owners of the business a return on their investment? There was a time, in fact, when the courts refused to offer any pro-

tection to the company in this respect, holding that the power to fix rates was a legislative not a judicial prerogative and that relief should be sought from the legislature, not from the courts.¹⁰

This attitude, however, could not long persist. As our industrial development continued and as legislative interference became more burdensome the Supreme Court was required to hear a number of cases in which it was claimed that the rates established by the legislative bodies were so low as to destroy the value of the property used in the interest of the public. The utility companies and the railroads contended that such rates were unconstitutional, in that they deprived the owners of their property without due process of law.¹¹ Gradually the Supreme Court reversed its previous position and, by 1896, clearly took the position that, while the legislature had the power in the first instance to regulate rates and service, the utility company, or railroad, had the right to apply to the courts for a judicial review of the rates so established.¹² As the matter now stands, therefore, the legislative branch of our government has regulatory powers over all industries "affected with a public interest," while the courts stand ready to offer protection against the abuse of such powers.

Legislative power of control, to whom delegated.—While the power to regulate public enterprises, in theory, rests with the legislatures, the application of regulatory policy, legislatively determined, is usually delegated to an administrative commission. The Interstate Commerce Commission, which is a Federal body, has jurisdiction over all railroads engaged in

¹⁰ This was the doctrine laid down in the case of *Munn v. Illinois*, (1876) 94 U. S. 113. In commenting on the power of the legislature to control rates the court here held: "We know that this is a power which may be abused; but that is no argument against its existence. For protection against abuses by legislatures the people must resort to the polls, not the courts."

¹¹ The XIVth Amendment to the Constitution of the United States reads in part, "... nor shall any state deprive any person of life, liberty, or property, without due process of law; nor deny any person within its jurisdiction the equal protection of the laws."

¹² "While rates for the transportation of persons and property within the limits of a State are primarily for its determination, the question whether they are so unreasonably low as to deprive the carrier of its property without such compensation as the Constitution secures, and therefore without due process of law, cannot be so conclusively determined by the legislature of the State or by regulations adopted under its authority, that the matter may not become the subject of judicial inquiry." *Smyth v. Ames*, 169 U. S. 466.

interstate commerce, all telephone and telegraph companies, pipe lines, express, and sleeping-car companies, in respect to interstate business, and all electric railways engaged in interstate commerce. On the other hand, electric light and power, gas, electric railway, local telephone and telegraph companies, private water companies, and other local utilities are generally under the control of state utilities commissions. At the present time (1928) every state but Delaware has some form of utilities commission.¹³

Attitude of commissions toward companies.—In the early history of public utility regulation state legislatures, as well as the various commissions, were primarily interested in protecting the public against certain abuses, particularly against discrimination and unreasonably high rates. There was little or no concern on the part of commissions as to the position of the investor in public utility securities. The latter's protection always lay in a protest to the courts when legislative interference became burdensome. Subsequently, however, a more moderate attitude has developed and generally both commissions and court recognize the desirability of fair treatment for the utility company as well as for the public.

Regulation of rates.—Among the more fundamental problems which have confronted both the commissions and the courts in connection with utility regulation have been those of rate making and valuation. These two problems are closely associated, for the entire question of fair rates involves a determination of the value of the property used in the interest of the public. A fair rate is one which will allow a proper return on the fair value of the property employed for the public benefit. It became necessary, therefore, to establish a proper basis for appraisal just as soon as the courts stood ready to protect the utility companies against confiscation. The valuation problem has thus assumed an aspect of considerable importance not only to the public but also to the investor in public utility enterprises, since the particular valuation allowed

¹³ In 1923, a report prepared for the Committee on Public Service Securities, Investment Bankers' Association, showed that 47 states and the District of Columbia had some form of utilities commission. See "Twelfth Annual Proceedings," 1923, pp. 116-124, Annual Report of the Committee on Public Service Securities. For detailed chart showing regulatory bodies and their jurisdiction and powers see p. 374, following.

determines not only the rates that shall be permitted, but also the earning power of the concern itself.¹⁴

Peculiar aspects of public utility valuation.—It is evident that the method of appraisal used in valuing public utility properties for rate purposes must differ from that used in appraising the property of industrials. In the former case, it is impossible to give much, if any, weight to market value, for market value is dependent, to a large extent, on earning power, which, in turn, varies with the rates allowed. If, therefore, market values were used as the basis for determining the rates a public utility should be allowed to charge, we would really be begging the entire question, since market value itself depends largely on the very rates it is desired to test.

For this reason it is necessary to use a different basis for valuing public utility property for rate making purposes. The two bases now most commonly used are: actual or original cost of construction; and cost of reproduction (or reproduction cost as we shall use the term). The term "actual," or "original," cost may be used to represent the amount actually invested in the enterprise from the beginning. Here is included not only the original investment but also surplus profits reinvested in the business. Or the term "original cost" may be used to represent the actual cost of the property now employed for the public convenience. In this case is meant, not the cost of the *original* property plus additions and betterments, but the cost of the present property. Thus, where portions of the plant have been abandoned from time to time, the original cost of acquiring them would not be included. The term "reproduction cost" may also be employed in two ways. It is sometimes used to mean the cost of reproducing the property new, that is, without depreciation; or it may be used to mean the cost of reproducing the property in its present depreciated condition. The claims made for and against these different bases of valuation will be considered in some detail.

Methods of valuation: original, or actual cost, basis.—The merit of the original, or actual cost, basis lies in the fact that it represents, as nearly as possible, the actual sacrifice of the investors. After all, is this not the real amount on which a

¹⁴ For a good treatment of the valuation problem in connection with public utilities, see Hartman, "Fair Value," 1920, Houghton Mifflin Co., Boston. See also Lyndon, "Rate Making for Public Utilities," 1923, McGraw-Hill, New York.

fair return should be allowed? Can the courts or commissions be called upon to go farther than this in giving protection to the investor?

It is true, that original cost as a basis for determining the fair value of utility property for rate making purposes has much to commend it. On the other hand, it is not without objections. The first difficulty arises from the fact that it takes no cognizance of fluctuating values. The past quarter of a century has witnessed a very substantial increase in the general price level. Is a company which was established twenty or more years ago to be allowed a return on the basis of construction costs at that time? Such a situation would undoubtedly prejudice some investors against the industry, even though the constant replacement that normally goes on tends to correct matters. It would also result in widely different rates for the same type of service, depending upon costs at the time a particular plant was erected.

The most cogent objection to original cost, however, lies in the practical difficulties of applying it. The accounting records of a company frequently are lost or prove to have been inadequately kept. In many cases, repairs and maintenance expenditures are not properly differentiated from betterments. When the present company is made up of a number of smaller subsidiaries the situation becomes even more involved. In other words, even where it is desirable to use actual or original cost, it is frequently impossible to do so.¹⁵

¹⁵ The following citations pertain to the use of actual cost for rate making purposes:

Cumberland Tel. and Tel. v. City of Louisville, 187 Fed. 637—realized difficulties of determining actual cost.

Ames v. Union Pacific Ry. Co., 64 Fed. 165—"Actual investment is not to be ignored even though such sum is far in excess of the present value."

Actual cost strongly upheld in San Diego Water Co. v. San Diego, 118 Cal. 556, 50 Pac. 633; Brymer v. Butler Water Co., 179 Pa. 231, 36 Atl. 249.

Coal & Coke Railway Co. v. Conley, 67 W. Va. 129, 67 S. E. 613.

The Wisconsin Railroad Commission, while holding that there is no single standard of valuation, has based the element of going value largely on an estimate of the actual cost of establishing the business. City of Appleton v. Appleton Water Works Co., 5 W. R. C. R. 215. See particularly p. 219.

Actual cost upheld by New York Public Service Commission in Mayhew v. Kings County Lighting Co., 2 P. S. C. 1st Dist. (N. Y.), Oct. 20, 1911. Actual cost also upheld by Pub. Serv. Comm. of N. H., Annual Report, 1912, p. 302.

The injustice of basing fair value on cost of reproduction is pointed out by the Interstate Commerce Commission in "Advances in Rates, Western Case," 20 I. C. C. R. 307. "Perhaps the nearest approximation to the fair standards is

Reproduction cost defined.—As a result of this situation and the difficulties of ascertaining actual cost, we have a different concept of value based on cost of reproduction. The term has generally been used to imply the cost of reproducing the property new on the basis of current prices, or on the basis of averaging prices over a period of, say, five years. The plant under consideration is usually assumed to be reconstructed from materials and equipment in every respect the same as those used in construction of the actual plant, although under certain conditions it is necessary to consider the cost of erecting a substitute plant of similar capacity.¹⁶

During the period preceding 1910, various commissions urged the use of the cost of reproduction basis on the grounds that the public was entitled to enjoy the benefits of lowered

that of bona fide investment—the sacrifice made by owners of the property—considering as a part of the investment any shortage of return that there may be in the early years of the enterprise.”

As one might expect, the public service corporations have, during the past ten years, been especially vigorous in upholding reproduction cost and have, no doubt, greatly exaggerated the difficulties of original actual cost. See Brief of C. E. Smith in *Lincoln v. Lincoln Water & Light Co.*, 1 P. U. C. No. 2406, p. 65. Senate Report No. 1290 of the 62d Congress, p. 54; Remarks of President Hadley before Senate Committee; Report, 3d Session 62d Congress, p. 236.

Recent decisions upholding actual cost: *Re Cripple Creek Water Co.*, P. U. R. 1916-C 788; *Public Service Comm. v. Pacific Tel. & Tel. Co.*, (Wash.) P. U. R. 1916-D, 947; *Butler v. Lewiston, A. & W. St. Ry. Co.*, (Me.) P. U. R. 1916-D, 25.

See also *Des Moines Gas Company v. City of Des Moines*, 238 U. S. 153, 168; *Lincoln Gas & Electric Co. v. Lincoln*, 250 U. S. 256, 268; *Missouri ex rel. Southwestern Bell Tel. Co. v. Public Serv. Comm.*, 262 U. S. 276; *The Pacific Telephone and Telegraph Co. v. Whitcomb et al.*, 12 Fed. (2d) 279; *Consolidated Gas Co. of N. Y. v. Prendergast et al.*, 6 Fed. (2d) 243; *Columbus Gas Light Co. v. Corporation Commission*, (Ind.) 140 N. E. 538; *People ex rel. Adirondack Power & Light Co. v. Public Service Commission*, 207 N. Y. S. 284.

Recent decisions modifying actual cost: *Re Indianapolis Water Company*, P. U. R. 1917-E, 556.

Potomac El. P. Co. et al. v. Pub. Util. Comm. et al., 276 Fed. 327, Circuit Court of Appeals, D. of C., holds “that the present cost of reproduction is one of the necessary elements for consideration, along with other relevant facts, in fixing the fair and reasonable value of the property” (p. 330).

See also other citations in this chapter.

¹⁶ In Hartman, “Fair Value,” 1922, p. 100, cost-of-reproduction theories are classified as follows: “(1) the cost of reproducing a plant, similar in all essentials to the existing plant, under present conditions; (2) the cost of reproducing a similar plant at present prices, under conditions prevailing at the time of original construction; (3) the cost of constructing a substitute plant capable of performing the same service. ‘Cost-of-reproduction-new—less depreciation,’ sometimes spoken as a fourth form of the theory, is but the application of depreciation rules to the inventory.”

costs, and that charges for service should be based on existing and not past costs. Since about 1910, however, the situation has been reversed and the public service corporations have strongly urged the use of the cost of reproduction basis for valuation.

Arguments pro and con reproduction-cost theory.—In general, the arguments in favor of cost of reproduction are based on the claim that the public is entitled to service at a rate of charge sufficient to pay a fair return on the investment necessary at the present time to furnish the service; while the company is entitled to a fair return on the capital investment which another company would have to make under present conditions to provide the service.

Undoubtedly there are reasons for considering fluctuations in value under certain conditions, but the logical outcome of a strict application of the cost of reproduction theory would inevitably result in an unearned, or unmerited, gain or loss either to the consumer or to the investor. This is distinctly what is to be avoided, so far as possible, in rate cases. The ultimate desideratum in public utility valuation is a rate which allows a fair return to the investor on the sum invested, and a fair rate to the consumer based on the original cost of erecting the property. If the investor is to be protected, therefore, against declining prices, why should the consumer not be protected against increasing values, especially where the increase in property values may be largely conjunctural, developing out of the normal growth of the community?¹⁷

Opposed to this argument, of course, is that based on the decline in the purchasing power of money caused by rising prices. To limit the return on public service property, say, to 1913 prices, would fail to maintain a status quo for the investor in such property if his investment were figured in terms of commodities. The more fortunate investor who committed his capital to industrial securities, on the other hand,

¹⁷ Re Franklin Light & Power Co., (N. H.) P. U. R., 1922-A: "It would seem unreasonable to mark up or down the valuation of all of our electric and other plants to correspond to the fluctuations in the cost of materials and labor, especially in such abnormal times as these. A permanent change in values may fairly be considered, but there is a pretty general feeling that money prudently invested should be reasonably secured against sudden or other reductions in values, and of course it would be equally objectionable to raise values to match fluctuations in cost of material and construction" (p. 514).

would find himself in a far more favorable position, in that he has been able to profit from an increase in property values. However, in so far as the return and principal of bonds and preferred stocks is fixed in nearly all cases, this argument applies only to the common stockholder. For, while the value of industrial property may have risen during the past ten years, the bondholder's return in any case is based strictly on the original investment.

One must also consider the public's need for extensions in public utility enterprises. The funds for extensions and expansion must ultimately come from the investor. Consequently, if the public utility commission denies the right to any unearned increment, funds are liable to be diverted to other enterprises where the investor is not similarly restricted.

Depreciation in connection with reproduction cost.—In considering the cost of reproduction theory, the problem of depreciation cannot be neglected. There are, in fact, two distinct lines of thought as to the proper method of handling depreciation. One group advocates a strict application of the cost to reproduce new basis without any allowance for depreciation. This group holds the theory that, so long as the service performed by the utility is equally as good as when the utility was new, it is immaterial to the consumer to what extent depreciation of individual property has occurred.¹⁸

The essential difficulty regarding the question of depreciation centers on the way in which depreciation is handled. Where depreciation is not provided for, but is returned to security holders in the form of earnings, clearly the depreciated value of the property should be taken as the rate base.

It may be true, as those advocating cost-of-reproduction-new suggest, that so long as service is efficient the public is not concerned, but eventually repairs and replacements will be-

¹⁸ One of the advocates of the cost-to-reproduce basis is A. C. Humphreys, President of Stevens Institute of Technology. See "Depreciation, Estimated and Actual," Proceedings of the American Gas Institute, Vol. VIII, Part II, p. 521. See also Blood, W. H., "The Passing of 'Depreciated Value' in Rate Cases"; and Webster, Geo. N., "Theoretical Depreciation, a Menace to the Public and the Investor." The cost-of-reproduction-less-depreciation theory has been upheld by Robert H. Whitten in "Valuation of Public Service Corporations," 1912, Vol. 1, p. 359; and by a Special Committee of the American Society of Civil Engineers in Report of the Special Committee to Formulate Principles and Methods for the Valuation of Railroad Property and Other Public Utilities, Dec. 1, 1913, p. 49.

come necessary, and whence are the funds to come? Earnings, once paid out, will not be returned. The only alternative is to raise such funds by new capital issues.

But when depreciation is properly charged against earnings and the depreciation is properly handled, we have a different situation. The meaning of the term "depreciation" is clear to us all; it is a recognition of the imperceptible, immeasurable decline in value that sets in from the day the capital instrument under consideration is completed. To be sure, there may be no appreciable lessening of its efficiency until the tenth year of its existence, say, when, suddenly, it becomes worthless. Nevertheless, in performing its service during these ten years, it has been yielding off value to the goods or services produced, and against its income should be charged up yearly amounts so that by ten years we will have a fund equivalent to the original investment, less whatever scrap value exists after the instrument is abandoned.

As applied to a public service plant, the propriety of charging depreciation against earnings is not questioned. Consequently, when *depreciated value* of the original plant is used as the rate base there should be added the depreciation fund, if set aside. If dispensed as earnings, then the depreciated value of the property should serve as the rate base. Or if, as is usually the case, the funds representing depreciation reserves have been turned back into the plant as additions and betterments, then these should be added to the depreciated value of the original plant.¹⁹

¹⁹ For an able discussion of this problem from an economic standpoint see Adams, J. P., "Depreciation in Relation to Public Utility Valuation," Papers and Proceedings American Assoc. of University Instructors in Accounting, Vol. VII, No. 1, 1922, p. 99. The following citations will indicate the attitude of the courts and some commissions on the question:

Report of the Massachusetts Joint Commission on the N. Y., N. H. & H. Ry. Co., Feb. 15, 1911, pp. 51-154. Upholds cost-of-reproduction-new, so long as property is maintained at 100 per cent capacity out of earnings or stock assessments.

City of Whitewater v. Whitewater Electric Light Co., 6 W. R. C. R. 132, 138. Commission upholds cost-of-reproduction-new "... since although the investment may apparently be diminished by failure to provide for depreciation and by the payment of this money to stockholders, in reality the investment is not diminished, because of the necessity of replacing the plant, in the absence of a depreciation fund, from the property of owners or stockholders."

Knoxville v. Water Co., 212 U. S. 1, 29 Sup. Ct. 148, 53 L. ed. 371. The

Present attitude toward reproduction cost.—Regardless of whether depreciation be considered in arriving at values based on reproduction costs or not, it is apparent that a fundamental distinction exists between reproduction values and actual cost. The arguments for and against these two theories have previously been set forth and we are again brought to a realization that neither method can be set up as a sole criterion of value, despite an attempt on the part of attorneys representing public service corporations to interpret the *Smyth v. Ames* case to mean that "present value" should be taken as the only value.

The language of the court on this point in *Smyth v. Ames*, already quoted, was as follows: "And, in order to ascertain that value (fair value for property used in convenience of public), the *original cost of construction*, the amount expended in permanent improvements, the amount and market value of its bonds and stocks, the *present as compared with the original cost of construction* must be taken into consideration."

It appears here that the court provided for using both original cost and present, or reproduction, cost. For, while it is true that in some instances the courts have held strictly to original cost,²⁰ and in other cases they have leaned essentially toward reproduction costs,²¹ there has been a recent tendency to modify the reproduction-cost theory in such a way as to make the results more closely conform to actual cost or else give weight to both methods.²²

Supreme Court here holds cost-of-reproduction-less-depreciation to be the controlling factor.

Minnesota Rate Cases, 230 U. S. 352. Upheld cost-of-reproduction-less-depreciation. Supreme Court rejected contention that increase in value due to adaptation and solidification of roadbed was more than adequate fully to offset all depreciation in physical structures, indicating that appreciation and depreciation should be estimated separately. Additional citations in Whitten, Robert H., "The Valuation of Public Service Corporations," Vol. I, Chapter XVIII. See also *Ibid.*, Vol. II, Chapter VIII, for four methods of determining annual and accrued depreciation.

²⁰ See citations on p. 357.

²¹ See *In re San José Water Co.*, (Cal.) P. U. R.-D, 706; *In re Terminal Taxicab Co.*, (D. C.) P. U. R. 1915-B, 546; *In re Bronx Gas & Elec. Co.*, (N. Y. 1st Dist.) P. U. R. 1916-A, 440; *Steenerson v Great Northern Ry. Co.*, 69 Minn. 353.

²² New Hampshire Public Service Commission, Report of Nov. 30, 1912, p. 302. Upholds amount honestly invested as fair basis of value. Wisconsin Railroad Comm. accepts investment idea in *Appleton v. Appleton Water Works*

Treatment of certain tangible and intangible items in utility valuation.—Up to this point, our discussion has centered on the particular aspect of value that should be adopted. There are other problems, however, which must be settled before any of the cost theories discussed can be used intelligently, and these questions hinge on the admission or exclusion of certain items in arriving at values.

While it is true that little doubt exists as to the propriety of including as elements of value those tangible items necessary to the public service corporation, and which were acquired at an actual cost, questions do arise as to the propriety of including other tangible items as well as some intangible items in arriving at the rate basis.

Unused property.—For instance, it is generally held that property which is not used, or which is not useful, even though acquired at a cost, may not be included in arriving at values for rate-making purposes.²³ The theory underlying this attitude is that the public should not be required to pay rates high enough to provide a return on an unnecessary investment, or to recoup the public service company for mistakes in judgment.

Property acquired by gift.—Essentially the same attitude has been taken in respect to tangible property acquired by gift and without cost. Such property, although necessary, represents no sacrifice, no investment, and no cost to the company

Co., 5 W. R. C. R. 215, although it gives consideration to reproduction cost. Massachusetts Public Service Commission accepts original value. In re Middlesex & Boston Rate Case, Oct. 28, 1914. In re Dunham, (Mo.) P. U. R. 1916-E, 544, decision in Smyth v. Ames literally construed. See also In re Munroe Ind. Tel. Co., (Neb.) P. U. R. 1917-E, 471; In re Lincoln v. Lincoln Water & Light Co., (Ill.) P. U. R. 1917-B, 1. Simpson v. Shepard, 230 U. S. 352, 33 Sup. Ct. 729. "The cost-of-reproduction method is of service in ascertaining the present value of the plant, when it is reasonably applied and when the cost of reproducing the property may be ascertained with a proper degree of certainty. But it does not justify the acceptance of results which depend upon mere conjecture." People ex rel. N. Y. State Rys. v. Public Service Comm., (App. Div.) 195 N. Y. Supp. 174. Holds that neither "cost before the war" nor "reproduction (cost) at the present time" is a true basis, but that the present value must be "something more than prewar cost less depreciation." City of Stamford v. Stamford Gas & Electric Co., (Conn.) P. U. R. 1922-A, 303. Favors an average reproduction cost. In re Franklin Light & Power Co., (N. H.) P. U. R. 1922-A, 506. Gives consideration to depreciated value and original cost.

²³ See particularly In re LaCrosse Gas & Elec. Co., 8 W. R. C. R. 138; In re Darlington Elec. Light & Water Power Co., 5 W. R. C. R. 397; San Diego Land & Town Co. v. Jasper, 189 U. S. 439, 23 Sup. Ct. 571, 47 L. ed. 892.

until replacement is necessary. Such property should, therefore, be excluded from the rate base.²⁴

Property acquired from surplus.—Another interesting problem also is created in respect to property acquired from surplus. Should such property be regarded as acquired from large earnings, and hence as representing no sacrifice from investors, or should it be considered as a reinvestment of the stockholders' earnings? The courts have generally held that, where earnings have arisen from exceptional management or from failure to declare dividends, and have not resulted from high rates, they represent a reinvestment and may be regarded as an item of cost.²⁵

Land values.—The question of land value has perhaps given as much difficulty in rate cases as any one item, not because of any doubt regarding the validity of its inclusion, but rather as to the proper method of appraisal.²⁶ Here the difficulty hinges largely on the propriety of allowing for increases in the values of land because of community growth. In some instances, there has been a tendency to appraise land at its present market value, while in other cases a "fair value" of land may be less than the market value of similar land in the vicinity. The Interstate Commerce Commission endeavors to ascertain the present value of land by multiplying the number of acres of land owned or used by the carrier for its purposes as a carrier by the "present market value" per acre of "similar, adjacent and adjoining lands," with due allowance for the "peculiar adaptability of the land to railroad use."²⁷ In general, the use of "multipliers" to account for cost of acquiring land, or to account for added value given because of adaptability for use by the public service corporation, has been condemned.²⁸

²⁴ While some earlier decisions favored the inclusion of such items, later decisions have adopted an opposite view. See *San Diego Water Co. v. San Diego*, 118 Cal. 556, 50 Pac. 633; *Ashland v. Ashland Water Co.*, 4 W. R. C. R. 273; *Pine Lawn v. W. St. Louis Water & Light Co.*, (Mo.) P. U. R. 1917-B, 679.

²⁵ See *In re Bridgeport Natural Gas & Oil Co.*, (W. Va.) P. U. R. 1916-C, 253; *In re Salem Tel. Co.*, (S. Dak.) P. U. R. 1919-B, 734; *Mass. Bd. of Gas. & Elec. Light Comm.*, 9th Ann. Rept., p. 90, *In re Haverhill Gas & Light Co.*

²⁶ There are three generally accepted methods of land appraisals: the "local expert method; the sales method; and the appraisal method." Hartman, "Fair Value," 1922, p. 139. They apply, of course, only in the reproduction-cost and estimated original-cost inventories.

²⁷ Valuation Docket No. 2, pp. 52-62.

²⁸ *Minnesota Rate Case*, 230 U. S. 352, 33 Sup. Ct. 729.

Overhead costs.—Other questions naturally arise regarding the valuation of specific types of tangible property, but our analysis has gone far enough to show that the courts and the commissions usually seek to include only those items which actually represent an investment by the public service corporation on the one hand, and which, on the other, are usefully employed in the business.

Other questions of interest center on the inclusion or exclusion of such items as engineering costs, superintendence, contingencies, contractors' profits, interest during construction, legal and general organization expenses, and promotion costs. These items, ordinarily classed as "overhead" expenses, are generally allowed by state commissions, where it can be proved that they were actually incurred and where they were not excessive. Likewise, discount on bonds and the additional expense involved because the utility company was necessarily constructed in "piece-meal" fashion may be regarded as legitimate items of cost. Franchise values, on the other hand, while allowed in valuation for taxation, and frequently in valuation for purchase and sale, are not generally considered in arriving at values for rate making purposes beyond the actual cost of acquiring the franchises.²⁹

²⁹ The following citations, while not complete, will indicate the courts' attitude on the treatment of intangible values:

City of Ripon v. Ripon Light & Water Co., 5 W. R. C. R. 1. 12 per cent on total inventory-reproduction-cost allowed to cover engineering, superintendence, legal expenses, interest during construction and contingencies.

Cedar Rapids Gaslight Co. v. Cedar Rapids, 223 U. S. 655. The Iowa Supreme Court was upheld in denying an allowance either for promotion or organization.

In appraisal of Chicago surface railways, 1906, Chicago Consolidated Traction Co., 1910, and Chicago gas plant, 1911, allowances made for organization expenses. See report, Traction Valuation Commission, Dec. 10, 1906; August, 1910; Report by Wm. T. Hagenah to Gas Sub-committee of Chicago Council Committee, April 17, 1911.

In appraisal of Cleveland street railways, 1909, 10 per cent added to total inventory value to cover organization, interest during construction, etc. Decision of U. S. Dist. Judge R. W. Taylor, re arbitration of valuation of property of Cleveland Ry. Co., Dec. 16 and 17, 1909.

Lincoln Gas & Electric Light Co., City of Lincoln, 182 Fed. 926, 928; 7.7 per cent inventory cost allowed.

New Jersey Pub. Util. Comm., 1911, allows 12 per cent. Re investigation of rates charged by Consolidated Gas Co. of Long Branch, N. J., July 25, 1911.

Mayhew v. Kings County Lighting Co., 2 P. S. C. 1st D. (N. Y.), Oct. 20, 1911, allows from 10 per cent to 15 per cent.

Going value.—One more point remains to be discussed in reference to intangible items and their relation to value, and that is the question of "going value." Utility companies have invariably contended that allowance should be made in regulatory valuation for a sum in addition to the mere physical value of the property to include a certain intangible element of value which is considered to exist because the concern is operating, has a clientele, and is actually running.³⁰ There are, in fact, several aspects of this question which must be treated differently, as going value is not always used to cover precisely the same thing.³¹

Where going value is considered as arising from expenditures necessary to secure new business, such charges, if actually incurred and charged to capital, may be included. But where such charges were not incurred, or were met out of operating expenses, obviously to include them in the rate base would duplicate the charge against future consumers.

For complete citations of earlier cases see Whitten, Robert H., "Valuation of Public Service Corporations," Vol. I, Chapters XII, XIII, and XV.

Lincoln v. Lincoln Water & Light Co., 1 P. U. C. No. 2496, P. U. R. 1917-B, 1. A list of typical overhead expenses suggested here.

Washington & M. R. Co., (D. C.) P. U. R. 1915-B, 558, holds that allowance for overhead must be on depreciated value of property.

Edwards v. Glen Tel. Co., (N. Y. 2d Dist.) P. U. R. 1916-B, 940. Promoters' profits included in valuation only upon showing reasonable necessity thereof and resulting benefit to service.

Lincoln v. Lincoln Water & Light Co., (Ill.) P. U. R. 1917-B, 1. Interest during construction as a capital charge limited to reasonable amount.

Bond discount is not generally held to be a capital charge, but is regarded as an interest charge, to be absorbed through earnings. Potomac Elec. Power Co., (D. C.) P. U. R. 1917-D, 563. (Especially where discount is not capitalized.) For more complete citations of recent cases see Hartman, "Fair Value," 1922, pp. 173, 174.

³⁰ Des Moines Gas Co. v. City of Des Moines et al., 35 Sup. Ct. Rep. 811. "That there is an element of value in an assembled and established plant, doing business and earning money, over one that is not thus advanced is self-evident. This element of value is a property right, and should be considered in determining the value of the property upon which the owner has the right to make a fair return . . ." (p. 815).

³¹ Hartman, "Fair Value," 1922, p. 179. "Four definitions (of going value) have been generally used. The term has been interpreted as the mere attribute of a utility in normal operation—organized, operated, and engaged in the public service. It has been defined as the difference between the exchange value of the plant and its appraised present value. Going value has been used as synonymous with 'good will' to mean the probability of customers continuing to come to the same company for service. And the term has been held to mean the net uncompensated deficits sustained by the company during the development stage of its existence, while operating at a loss."

Another use of the term "going value" implies the difference between exchange value and appraised value. Such a concept of going value must be omitted from consideration in determining the rate base, for to include it would throw us back simply to market value, the objections to which have already been emphasized.³²

That aspect of going value based on "good will" cannot legitimately be allowed unless an actual expenditure has been involved to secure it. Good will, as generally used to indicate an element of value derived from the fixed and favorable consideration of customers, has no place in rate making, since the customers usually have no option in placing their patronage.³³

More justifiable, however, are the claims made by public service corporations that accrued deficits and unpaid early losses should be given consideration. The Wisconsin Railroad Commission was one of the first to establish a definite procedure for handling early deficits. Under their plan, which has been followed elsewhere with variations, early deficits may be capitalized on the same basis that engineering expenses, legal fees, and other construction expenses are capitalized.³⁴ The Commission, however, does not take into account losses due to bad management.³⁵

Valuation for purposes other than rate making.—It would take us too far afield in our present problem to discuss all the points of difference between valuation for rate purposes, for capitalization, for purchase, and for taxation. In general, however, the following distinctions may be said to exist. In valuations for rate purposes what is sought is a fair value upon which to base a fair return. And fair value has, with the exception of certain increases in value, been used to imply

³² See *Fuhrmann v. Cataract P. & C. Co.*, 3 N. Y. P. S. C. (2d Dist.) 656.

³³ See *Willcox v. Consol. Gas. Co.*, 212 U. S. 17, 29 Sup. Ct. Rep. 192, 53 L. ed. 382; *Des Moines Gas Co. v. Des Moines*, 238 U. S. 113, 59 L. ed. 1244.

³⁴ Outlined in *City of Milwaukee v. Milwaukee Gas Light Co.*, 12 W. R. C. R. 441. For a diagrammatic explanation of this theory see Gerstenberg, C. W., "Financial Organization and Management of Business," p. 15, 1924, Prentice-Hall, Inc., 70 Fifth Ave., New York.

³⁵ *Superior Commercial Club v. Superior Water, Light & Power Co.*, 11 W. R. C. R. 704; *Galveston Elec. Co. v. City of Galveston*, 42 Sup. Ct. Rep. 354. A recent treatise on this subject is "Going Concern Value in Rate Cases," W. H. Blood, Jr., Reprint No. 28, *Stone & Webster Journal*, Aug. 1922. See also "Going Value as an Element in the Valuation of Public Utility Properties," *Harvard Business Review*, Vol. I, pp. 359-367.

at least an investment or sacrifice on the part of the owners of the public service corporation. Valuation for capitalization must be substantially the same as value for rate purposes if the securities authorized are to have adequate earning power to support their value. Valuation for tax purposes, on the other hand, tends more closely to conform to market value, and, where earnings are low, may be considerably less than fair value for rate purposes.³⁶ Tax laws differ widely and the bases of appraisal are many. In fact, precedents as to appraisals for tax purposes show that public utility properties, as well as other types of property, are generally appraised at market value. Further, there is no relation between earnings, rates, and value to consider here as in the case of valuation for rate purposes. Valuation for purchase, while closely related to value for rate purposes, is different.³⁷ There are grounds here for leaning strongly toward the capitalization method of value, or at least for taking into account the market value of the property as being the product of two variables—cost and rates.³⁸

A fair return on fair value.—Closely related to the problem of the valuation is the question, What constitutes a fair return? The determination of a rate base is of little consequence unless it is known what net returns should be allowed thereon. In the case of steam railroads a return of $5\frac{3}{4}$ per cent is considered fair by the Interstate Commerce Commission (under mandate from Congress). The courts and state commissions, on the other hand, have been somewhat more liberal in the case of public utilities and have generally allowed between 7 and 8 per cent, although, in some cases, a return as high as 9 per cent has been authorized.³⁹ Again, it should be recalled

³⁶ See "Proceedings of the 23d Annual Convention," National Association of Railway Commissioners, Oct., 1911, p. 148.

³⁷ See *Willcox v. Consolidated Gas Co.*, 212 U. S. 19, 29 Sup. Ct. 192, 53 L. ed. 382; *Omaha v. Omaha Water Co.*, 218 U. S. 180, 30 Sup. Ct. 615.

³⁸ See *Fuhrmann v. Cataract Power & Conduit Co.*, 3 P. S. C. 2d Dist. (N. Y.) 656.

³⁹ The following is a résumé of some of the more recent decisions bearing on the rate of return which public utility companies have been allowed to earn:

A return of 7 per cent in the case of an electric utility was held reasonable. *Re Houghton County Electric Light Co.*, (Mich.) P. U. R. 1924-B, 32.

An annual return of 8 per cent of the value of an electric utility was considered just and reasonable. *Northwestern Ohio Light Co. v. Leipzic*, (Ohio) P. U. R. 1924-B, 762.

that there is no guaranty or assurance that a particular company will earn a fair rate on its investment. The only protection actually afforded to the investor in utility companies is the assurance that the company, under normal management, will be allowed, within reasonable limits, rates that will provide a fair return on the fair value of property used for the public good.

Other problems of regulation.—It is easy to see how the protection afforded public utility companies by the courts in the matter of rates and valuations gave rise to other problems of regulation which called for a widening of the commissions' powers to include more than rate making activities. It is true that neither the courts nor commissions have ever stood ready to sanction unreasonably high rates, even though such rates might be necessary to give a fair return on property investment. Nevertheless, in view of the accepted idea that a reasonable return should be allowed, where possible, it appeared logical to give the commission power to authorize extensions to existing plants, to determine whether a new plant

A return of 7 per cent was considered reasonable in the case of a water utility. *Re Indianapolis Water Co., (Ind.) P. U. R. 1924-B, 306.*

Three decisions in reference to electric light companies in 1924 by the California commission allowed returns as follows: *Re Southern California Edison Co., P. U. R. 1924-C, 1* (7.5 per cent); *Re Coast Valleys Gas & Electric Co., P. U. R. 1924-C, 40* (8 per cent); *Re Coast Counties Gas & Electric Co., P. U. R. 1924-C, 415* (8 per cent).

A street railway utility was allowed 7 per cent for an annual return. *Re Omaha & Council Bluffs Street Railway Co., (Neb.) P. U. R. 1924-A, 627.*

A public utility company operating electric, heating, and telephone departments and rendering efficient service was allowed a return of 8 per cent upon the present fair value of its property. *Re Northern States Power Co., (N. D.) P. U. R. 1924-A, 325.*

A gas utility was allowed a return of 7 per cent on the fair present value. *Re Springfield Gas & Electric Co., (Mo.) P. U. R. 1924-A, 613.*

A gas utility which had made investments in advance of demands for service was allowed a return of 7 per cent. *Trustees of Freeport v. Nassau & Suffolk Lighting Co., (N. Y.) P. U. R. 1924-A, 96.*

The return of a telephone utility was fixed at 8 per cent annually. *Re Interstate Utilities Co., (Ida.) P. U. R. 1924-A, 197.*

A rate of return of 9 per cent was declared excessive in the cases of a telephone utility, while a return of 7½ per cent upon the rate base was found to be just and reasonable. *Illinois Commerce Commission v. Chicago Telephone Co., (Ill.) P. U. R. 1924-A, 213.*

A return of 8 per cent was held to be a rate customarily required to be named on the present value of the property of a regulated gas utility. *Consolidated Gas Company of New York v. Prendergast, P. U. R. 1925-B, 773* (U. S. District Court, N. Y.).

should be permitted to enter the field, to regulate security issues, and to approve consolidations and mergers. In other words, since a company must be permitted, where reasonably possible, to earn a fair return once it is in the field, why should the commission not be permitted to determine whether there is a sufficient need for its services at fair rates to assure a fair return on the necessary investment before any investment is allowed at all. The same argument applies to extensions of present plants. Being obliged to permit a fair return, should not the commissions have power to regulate the issue of securities which are to be sold to the public and for which the public looks to the commission for adequate earnings? Since earnings may be accurately or inaccurately stated according to the methods of accounting employed, in many cases the commissions are given power to prescribe the methods by which accounts shall be kept. On the basis of this reasoning, therefore, a gradual extension of the powers of utility commissions has taken place over the entire field of public control. The status of the commission control as it is now customarily exercised will be considered briefly.

General discussion of powers of commissions.—Regulation of local utilities is distinctly a state, not a Federal, function. Accordingly, one expects to find a wide variation in the powers granted among the different states.⁴⁰ While practically all state commissions are granted authority over rates, and many states are also given the power to determine valuation for rate making purposes, only twenty-five commissions have authority in all four of the closely related matters, namely, valuation, rates, service, and capitalization. It is further observed that, while all of the states do, or may, require privately owned properties to make reports of financial operations, only about three fourths require that these reports be published.

In connection with rates, usually proceedings may be initiated upon petition of customers or utilities, and sometimes on the commission's own motion. The commission's function is to conduct hearings and, after considering all the facts, to grant rates which are reasonable to the public and which allow a fair return on the "fair value" of the property owned by

⁴⁰ See Annual Report Committee on Public Service Securities, I. B. A. of A., "Twelfth Annual Proceedings," 1923, pp. 116-124, on need of uniform laws for state regulation.

the utility and used in public interest. The question of fair value is closely connected with that of rate structures, and to-day rate cases generally involve questions of valuation which are considered simultaneously.

Another important function usually performed by the commission is that of prescribing and enforcing proper standards of service. Thus, in the case of electric railway companies, commissions are given the power to prescribe the frequency of car service, the number of seats per car, braking and other safety equipment to be installed, conditions of operation, and so forth. In the case of electric and gas companies the character of the service is regulated, such as voltage regulation, the B.T.U. content of gas, and proper tests for meters. Some commissions prepare and publish elaborate rules and regulations, not only in respect to the preceding matters, but also covering standards and character of property construction, the adjustment of interference problems in connection with high tension transmission lines, specifications for grade crossings, and other matters which are related to efficient and continuous service.

As commission control has been extended to cover matters of rates and valuation, it has been found necessary to include, under regulatory functions, the control of accounting methods. Accordingly, many commissions are empowered to establish standard accounting systems for all utilities under their control. The purpose of this standardization is to secure uniformity in the annual reports made by utilities to the commissions. Without such standardization accurate comparisons over a period of years would be impossible. Furthermore, the use of standard systems of accounts prevents misrepresentation that is often possible by manipulating accounting for reserves, depreciation, retirements, and betterments. In some cases commissions are empowered, not only to establish standard accounting systems, but also to prohibit the keeping of any other systems of account or memoranda. This power is expressly granted to the Interstate Commerce Commission.

Some twenty-six commissions have specific jurisdiction over the capitalization of utilities. When a utility company wishes to issue long term securities, it is required to file with the commission a statement of the character and amount of the issue, the purposes for which the proceeds are to be used,

available income, data relative to present capitalization, values, and so on. The approval of the commission is then required before the securities can be sold.

While the legal theory is that a fair rate is one which will allow the utility company to earn a fair return on its property, there is no guaranty that such a return will be earned, or that the promised interest or dividend rate will be earned on any given issue of bonds or stock. Nevertheless, regulatory commissions often feel a certain responsibility toward the security holders in companies over which they have regulatory powers. It is a logical extension of power, therefore, to include control over the matter of security issues. When the commission is empowered to pass on or to approve a given security issue, it is then in a position to check the purposes for which it is to be used, the amount of the proposed issue with respect to present earnings and assets, the probable need for the extensions that are to be financed out of the proceeds of such issues, and so on. Needless to say, the commission is not likely to assent to securities issued against inflated values, or for erecting extensions that are likely to be unprofitable. Furthermore, inflation, stock watering, and security jobbing are minimized when the commission has control over these matters.

Closely allied with jurisdiction over new capital issues is the power frequently given to commissions in respect to extensions of public utility property. Extensions to existing property are often made by companies as a matter of routine. In other cases, however, the expenditure of large sums of money is required with the promise of little revenue. If it appears that this situation is temporary, and immediate losses are small in respect to total revenues, then no important questions arise. If, however, extensions are likely to remain unprofitable for a substantial period of time and to impose a burden on the entire system necessitating higher rates, then it is the function of the commission to determine the wisdom of such a program.

In thirty-one states the public utility commissions are authorized to regulate the extent to which competition among all or certain specified utilities will be permitted. In such states it is customary to require the utility company, before it can undertake operations within the state, to apply to the commission for a certificate of convenience and necessity. If no other similar utility is already operating within the region to be

served, and if the applying company offers promise of successful operation, the certificate is granted. However, if the territory is already adequately served by an existing company, in a manner reasonably satisfactory, and at reasonable rates, usually the petition is denied. Here legal sanction is given to the economic law, already discussed, that utilities are natural monopolies. Under normal conditions one company can serve the community better and more economically than can several, provided intelligent control prevents the company from charging unreasonable rates or rendering inadequate service by virtue of its monopoly.

The table on page 374, prepared for the Committee on Public Service Securities, Investment Bankers Association, and appearing in the Annual Proceedings for 1923, will indicate, in a general way, the scope of commission jurisdiction in the various states at that time.

It is interesting to note at this point that, while commissions have been given broad regulatory powers in respect to utilities, they have not been delegated managerial powers. It is important, too, that this distinction is maintained. If regulated utilities are to grow and to continue to meet the demands for their service, they must be made to retain full responsibilities for such service. A division of responsibilities between commission and company would be fatal. In fact, various courts, even the Supreme Court of the United States, have held that commissions cannot lawfully assume managerial functions and responsibilities which inhere in private ownership and operation.⁴¹

Significance of regulation to investor.—The significance of this situation to the investor in public utility securities may now be more fully explained. In the first place, it is evident that public utility enterprises occupy a position of unique importance in economic life. They supply basic necessities, usually under monopolistic conditions. Frequently the

⁴¹ "So far as appears, plaintiff in error's board of directors has exercised a proper discretion about this matter requiring business judgment. It must never be forgotten that, while the state may regulate with a view to enforcing reasonable rates and charges, it is not the owner of the property of public utility companies and is not clothed with the general power of management incident to ownership." *Re Southwestern Bell Telephone Co.*, 262 U. S. 276, P. U. R. 1923-C, 193, 200.

monopoly they enjoy is the result of a direct grant of the legislature. On the other hand, they are subject to public control,

Fig. 17.—Summary Chart Showing Jurisdiction of State Commissions Over Public Utilities.

Ref. No.	State or District	JURISDICTION EXTENDS OVER OPERATION OF PRIVATELY OWNED						AUTHORITY INCLUDES THE REGULATION OF PRIVATELY OWNED PROPERTIES AS TO						REPORTS OF FINANCIAL OPERATIONS OF PRIVATELY OWNED PROPERTIES				AUTHORITY INCLUDES REGULATION OF FINANCIALLY OWNED PROPERTIES AS TO		
		Electric Light & Power Companies	Gas Companies	Street & Interurban Railways	Auto Buses	Water Companies	Telephone & Telegraph Companies	Valuation for Rate-making, etc.	Rates	Capitalization	Services ¹	Issue of Certificates of Necessity	Are or May Be Required by Commissions	Are Open to Public	Are Published by Commissions	Rate	Services	Accounting		
1	Alabama	Yes	Yes	Yes	Legislation Pending	Yes	Yes	Yes (1)	Yes	Yes	Yes	Yes	Yes (10a)	Yes	Yes (10a)	No	No	No		
2	Arizona	Yes	Yes	Yes	Yes	Yes	Yes	Yes (1)	Yes	Yes	Yes	Yes	Yes	Yes	No (1)	No (2)	No (3)			
3	Arkansas	Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes	Yes	No	No	No			
4	California	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
5	Colorado	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
6	Connecticut	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
7	Delaware	No...	Commission	...	...	...	...	...	Del.	...	for Buses	...	...	...	...	No	No	No
8	D.C.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
9	Florida	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
10	Georgia	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
11	Idaho	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
12	Illinois	Yes	Yes	Yes	Yes	Yes	Yes	Yes (1)	Yes	Yes (1)	Yes	Yes	Yes	Yes	No ¹	Yes	Yes	Yes		
13	Indiana	Yes—Trans- mission Lines	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes		
14	Iowa	Yes—Trans- mission Lines	Yes	Yes	Yes	Yes	Yes	Limited	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
15	Kansas	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
16	Kentucky	No	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Incomplete	No	No	No		
17	Louisiana	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
18	Maine	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes (10)	Yes	Yes	No	Yes	Yes	Yes		
19	Maryland	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
20	Massachusetts	Yes	Yes	Yes	Yes	Limited	Yes	Yes	Yes	Yes	Yes	Yes (18)	Yes	Yes	Yes	Ltd	Ltd	Yes		
21	Michigan	Yes (10)	Yes (10)	Yes (10)	Yes (10)	Yes (10)	Yes (10)	Yes (10)	Yes (10)	Yes (10)	Yes (10)	Yes (10)	Yes	Yes	Yes	No	No	No		
22	Minnesota	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
23	Mississippi	No	No	No	No	No	Yes	Yes	No	Yes	Yes (14)	Yes (14)	Yes	Yes	Yes	Yes	Yes	Yes		
24	Missouri	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
25	Montana	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
26	Nebraska	Yes—Trans- mission Lines Only	Yes	Yes	Limited	Yes	Yes	Yes	Yes	Yes	Yes (10)	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
27	Nevada	Yes	Yes	Yes	No (11)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
28	New Hampshire	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
29	New Jersey	Yes	Yes	Yes	Partially	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
30	New Mexico	Limited	No	No	No	No	Yes	Limited	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	No		
31	New York	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
32	North Carolina	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
33	North Dakota	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
34	Ohio	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
35	Oklahoma	Yes	Yes	Yes	No	Yes	Limited	Yes (5)	No	No	Yes	No (5)	Yes	Yes	No	No	No	No		
36	Oregon	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes (11)	Yes	Yes	Yes	No	No	No		
37	Pennsylvania	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes—May be sewerbed	Yes	Yes	Yes	Yes	Yes		
38	Rhode Island	Yes	Yes	Yes	Limited	Yes	Yes	Yes	No	Yes	No	Yes	Yes—R.R. sewerbed	Yes	Partly sewerbed	No (13)	No (1)	No (2)		
39	South Carolina	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
40	South Dakota	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
41	Tennessee	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
42	Texas (12)	No	No	No	No	No	Ltd— Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No		
43	Utah	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
44	Vermont	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
45	Virginia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
46	Washington	Yes	Yes	Yes	Yes (9)	Yes	Yes	Yes	No	Yes	Yes	Yes (10)	Yes	Yes	Yes	No	No	No		
47	West Virginia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
48	Wisconsin	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
49	Wyoming	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		

NOTES: Telephone and Telegraph Companies are generally considered "Common Carriers" with Steam Roads, Express Companies, etc.

- Alabama—Excludes tel. and tel. companies.
- Arizona—Excludes municipal operations beyond their own city limits.
- Arkansas—Powers of commission limited to such cases as do not come under municipal councils, city commissions or improvement districts, which have primary authority.
- Florida—For electric street railways only.
- Illinois—Excludes gas and electric properties only by order of local public utilities.
- Maine—Applies to railways, electric and gas companies.
- Maryland—Municipal gas and electric properties only by order of local public utilities.
- Massachusetts—Only as to railways and long-distance telephone lines.
- Michigan—Excludes auto buses operating within limits of one city.
- Michigan—Confined to insurance of securities.
- Michigan—No authority over rates fixed by franchise.
- Michigan—Confined to telephones, auto buses and tracks.
- Minnesota—Excludes for street railways.
- Missouri—Excludes municipally owned water plants.
- Nebraska—Includes jurisdiction of security issues of all public utilities and common carriers.
- Nevada—Delegated to county commissioner, July 1, 1925.
- New Jersey—Where route is on same street as street-railway company.
- New York—Limited to companies having more than \$10,000 physical property.
- Oregon—Excludes auto buses, telegraph and long-distance telephone lines.
- Pennsylvania—Not exercised by commission.
- Rhode Island—Applies to water companies only.
- South Dakota—Excludes telephone companies.
- Texas—Commission authority covers railroads, city buses, natural gas companies and utilities.
- Washington—For auto transportation companies only.

which limits the return they may earn. Yet, there is an implied contract with the public that charges will be authorized to permit a fair return on the fair value of property used for

public service. Consequently, the investor expects, and generally finds, that the earnings of utility companies, while steady, are limited. There is a reasonable assurance that a fair return will be earned on securities outstanding, in so far as there is not overcapitalization. On the other hand, the investor no longer looks to the securities of public utility companies for the large speculative profits that occasionally come from commitments in industrial securities.

Furthermore, the extension of the powers of public utility commissions to cover such matters as the right of new companies to enter the field, the issuance of new securities, extensions to existing properties, and accounting afford the investor in public utilities a certain amount of protection not found among industrial securities. Where the utility is located in a state with intelligent commission regulation, there is at least a presumption in favor of the soundness of its underlying securities, bonds, and preferred stocks, which may even be extended to the common stock of the company.

Property values and earnings in relation to values.—The appraisals which are made of the assets of public utilities in arriving at the fair value of their properties likewise afford the investor a fairly good check on the book value of the assets as well as on the real value of the stocks and bonds which the company has outstanding. In fact, the question of property values is of far greater importance in the case of public utilities than in the case of industrials. In the latter case, asset values depend largely on earning power, which results from charges regulated by competition only. The real worth of an industrial plant is determined by what it can earn year in and year out. The extent of physical assets may prevent the value of its securities from going below certain levels, but the dearth of extensive physical assets will not prevent its common stock from rising to high levels, where earnings so warrant. In view of the close relationship between earnings and asset values in the case of public utilities on the other hand, a relationship reinforced by legislative and judicial control, it is apparent that the market value of securities outstanding must bear some relation to the fair value of the actual property owned.

Guaranty of fair return.—Regulation, however favorable to the utility, in no wise affords a guaranty that a fair return will be earned by any given company on its property invest-

ment. The existence of regulation does not serve to abolish all economic hazards. Even though a given enterprise is protected from the competition of like concerns in the field, there still exists the constant liability of competition from the use of substitutes. The best recent example of such competition is found in the increased use of automobiles, taxis, and buses at the expense of electric railway systems. Other forms of competition by substitution can readily be recalled. The development of electricity as a means of lighting at one time threatened the gas industry, although the latter has developed sufficient new business in industrial and domestic heating fields to offset the increased use of electricity in the lighting field.

Economic hazards in utility operation.—Further hazards to which utility companies are subjected are economic in nature. Rising production costs require increased rates. Yet, increased rates may discourage consumption to such an extent that operating revenues remain constant or even decline. On the other hand, public utility enterprises operate under the law of increasing returns so that expenses cannot be reduced as business declines. Net earnings, therefore, are not always controlled through the rates allowed. Another factor which may reduce earnings is a decline in the population of a community. It is quite necessary, therefore, for the investor to be familiar in a broad way with conditions in the territory in which he invests his funds.

Regulation unfavorable, though present tendencies favorable.—It is also true that the regulation to which public utilities are subjected may itself react unfavorably to the investor. There is no doubt that the railroads of this country were treated unfairly by the Interstate Commerce Commission from 1910 to 1920. Rates were kept at relatively low levels despite rising costs. The same situation occasionally has prevailed in respect to public utilities in certain states. One must always consider the possibility that regulatory bodies may lean in favor of the people from whom they derive their power rather than toward the companies they regulate. This tendency has been less in evidence during the present decade than ever before and bids fair to be of decreasing importance in the future. It has been clearly demonstrated that excessive or unfair regulation discourages the investment of capital and prevents the utility from rendering proper service. Commis-

sions now recognize the necessity of fair treatment to all, and, in most states, a real effort is made to regulate in a manner that does full justice to all. The courts have likewise held to this view, with the result that the return allowed is now around 8 per cent as compared with 4 or 5 per cent several years ago.

Economics of public utility operation: capitalization and output.—An examination of the 1919 census statistics on manufacturing enterprises in the United States shows that the total capitalization in 1919 amounted to about 72 per cent of the value of output in that year; in other words, \$0.72 of capitalization was required to produce \$1 in gross return. By contrasting this with a typical utility company serving a large community, where the capitalization will normally range between four and five times its annual gross revenues, one is impressed with the heavy capital requirements of the utility industry.⁴²

This situation is partially due to the fact that typical industrial companies constitute only one unit in the entire process of manufacture. Consider, in this respect, the various operations performed in the conversion of iron ore into a finished automobile. Similarly in the textile industry, the raw product often passes through several stages before it emerges ready for final consumer use. In the electric light and power industry, on the other hand, the entire process is often consummated at one step. The cost of materials forms a much smaller proportion of total output in most public utility enterprises than in the case of typical industrials.

The load factor.—There is still another reason, however, why the capital requirements of utilities are high in relation to output. This is due to the fact that, in the nature of the case, the plant and distribution facilities are not fully utilized at all times. The degree of capacity utilization is usually

⁴² See pp. 417-419 for further analysis. Based on census data for 1922 the relation of capital to value of output for typical utilities were as follows:

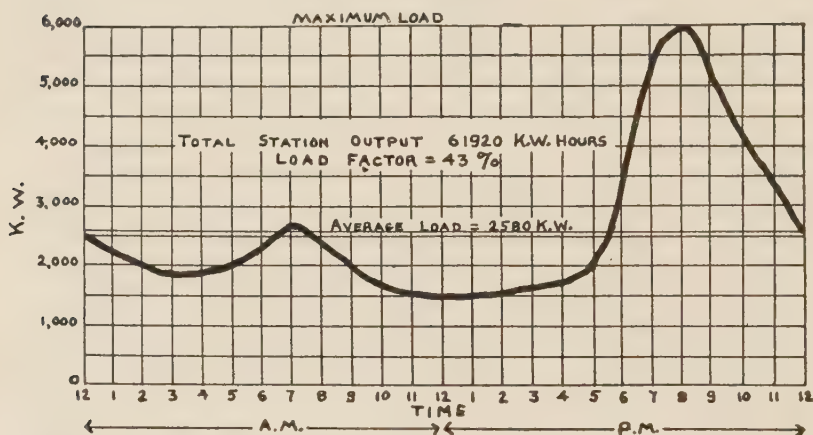
DOLLARS OF CAPITAL REQUIRED TO PRODUCE ONE DOLLAR OF
OUTPUT

Electric Light and Power.....	\$4.16
Electric Railways	5.19
Manufactured Gas (1919).....	4.49

measured and expressed as the "load factor." This term may be defined for a given station as the ratio of the average load to the peak load during the period, in other words, as the ratio of maximum instantaneous demand upon the plant to the average rate of output.

The demand for the services of public utility companies varies widely,⁴³ not only as between seasons, but from day to day and from hour to hour. The following chart showing the load curve of a typical power plant will illustrate this point effectively:

Fig. 18.—Load Curve—Typical Power Plant.



The average load of this station for the 24-hour period was 2,580 kw., as contrasted with a maximum load of 6,000 kw.

The load factor is thus expressed as 43 per cent. Furthermore, there were times during the period when the actual load was below 1,500 kw.

The preceding curve covers a period of only one day. There are further variations in the load factor for different days of the week, and for different months of the year. In the case of electric light and power companies serving primarily domestic customers, the demand for current is much heavier during winter months than during summer months.

⁴³ See Watkins, G. P., "Electrical Rates: The Load Factor and the Density Factor," *Quarterly Journal of Economics*, Vol. 30, May, 1916, pp. 519-545.

The same general principle applies as well to other utilities. Street car companies must have sufficient equipment and operating force to meet early morning and late afternoon demands for service, although a substantial part of this equipment may be idle during the remainder of the day. Gas companies must be able to supply sufficient gas to meet household requirements at meal hours, although demand may be much lower at other hours. Water companies are subject to even greater variations in demand, especially since they must provide for fire protection as well as for normal uses.

Such variations in the demand for utility services have a twofold significance to the investor. In the first place, they explain in part the apparently heavy capital requirements of such enterprises. Furthermore, they furnish the investor with a partial guide to the earning capacity of a given company. Obviously the greater the maximum variations from the average output, the greater the capital investment necessary to deliver a given amount of service, and the lower the rate of gross return, other things remaining equal. Conversely, the smaller the variation between average and maximum output, the more effectively the investment in a given utility is being employed.

Rate structures.—The ideal rate structure for a given utility is one that yields a maximum gross revenue with a minimum of capital investment and out-of-pocket expense. In seeking this end, the utility company endeavors, among other things, to increase its load factor. At first glance it might appear that rates for service should be the same for all consumers. Such uniformity in rates, however, would be unfair as well as uneconomical. There is a wide difference in the production cost of the various units sold, depending on the quantity sold to a given customer, the regularity or continuity of service, the time at which the service is required, and so on.

In considering first the problem of rates in the electric light and power industry let us refer briefly to the chart appearing on page 378. This chart shows that the load on the station there referred to, between the hours of 11.30 A.M. and 1.30 P.M., was only about 23 per cent of its maximum capacity. In fact, between 12.01 A.M. and 5.30 P.M., this plant has a substantial amount of excess capacity. In order to increase the use of current during these hours, the management would

be justified in selling current at a substantially lower rate than during the hours 6.00 P.M. to 11.30 P.M. In fact, it would be possible substantially to ignore capital costs in devising rates to stimulate the use of power during certain hours of the day, so long as so-called increment, or out-of-pocket expenses, were met and a profit was shown. That is, the utility company has its investment built up to meet the peak load. The addition of customers whose use of current can be restricted definitely to certain hours will require no additional capital investment. On the other hand, customers who make further demands on the capital facilities of the company, because of the nature of their business, should be charged a higher rate.

Looking at the problem in another way, one observes that a consumer having a 40-horse-power motor in use two hours per day uses as much power as another consumer with a 10-horse-power motor which is used eight hours a day. Yet it takes four times as much capital to supply the first user as the second, a fact which ought to be taken into account when establishing rate structures. A proper structure will account for the fixed charges required in furnishing a given service as well as for the operating expenses which vary in proportion to the time during which the power is used.

As already suggested, a given rate structure may or may not adhere strictly to the cost of service idea. In the case of power rates, adjustments must be made to meet competing sources of power. Since motors are used for the most part during the daytime, when there is a large percentage of plant capacity idle, power rates are generally lower than lighting rates. Power rates may vary further among different concerns, depending on continuity of use, time of maximum load, and the rate which can be put into effect without causing the use of competing sources of power.⁴⁴

⁴⁴ It must also be kept in mind that the demands of customers are diverse, that their maximum instantaneous demands do not coincide. This is a determining factor in the adjustment of plant capacity to meet demand. This diversity is often expressed and measured by what is called the diversity factor. If a group of concerns so operate that their maximum demands do not fall at the same time, the maximum station load resulting from such service will be less than the total of the maximum demands of individual customers. The diversity factor may be defined "as the ratio of the total of the maximum demands of individual customers occurring at any time during a given period to the maximum station load resulting from such service at any time during the same period" (Nash, "Economics of Public Utilities," 1925, p. 249).

Although there are several different types of industrial power rate structures in use, the following method of constructing charges is frequently used: a flat charge is first determined, based on the horse power of connected load; the meter or service rates are then made up of a primary rate based upon one hour's use per day of the load and a secondary and lower rate for each additional hour's use of the load per day.

Incandescent lighting and domestic rates are adjusted at a point which reflects the principle of joint-cost product pricing. The competition of alternatives is less felt here than in the case of power service, with the result that, in the past, domestic rates have often been so adjusted that the return therefrom, together with other revenues, has constituted an adequate return on invested capital after payment of operating expenses. Recently, however, there has been a tendency to experiment with domestic rates, in order to stimulate greater use of electric energy for household accessories, particularly those used during the day.⁴⁵

In the gas industry somewhat similar problems arise, although the general practice here is much simpler than in the electric light and power field. Gas is frequently sold at a flat rate per thousand cubic feet used, regardless of the size of the customer's consumption. This practice ignores the fact that the large customer may represent no greater investment in main, meter, and office overhead than the small one.⁴⁶ More recently, however, there has been a tendency toward a reduction in charges where gas is used for heating. It is only by offering such an inducement that gas companies can stimulate extensive use of gas for this purpose.

Telephone companies often charge flat rates for home telephones, although such a charge does not fully reflect the cost of service to the individual subscriber. Furthermore, telephone rates for residential subscribers are usually lower than business telephones, even though the capital investment for the former service is usually the greater. The reason for this

⁴⁵ See *Annalist*, Nov. 18, 1927, p. 779, "Studies in the Household Market for Electricity," by Philip Cabot.

⁴⁶ Where the large consumer's use involves a larger instantaneous demand an additional investment in main is required.

anomaly lies in the fact that the business telephone is a necessity and must be had regardless of cost. The residence telephone is not a necessity and its use is stimulated only by means of a low rate. It is the old principle of charging what the traffic will bear. An ideal rate structure would provide for a flat monthly rate to each customer plus a charge for service in proportion to the number of calls originated. This system is now in more common use than formerly, when mechanical and accounting difficulties militated against its success. The system of toll rates and the use of prepayment telephones approaches the cost of service principle, although the practice of lowering the toll rate during evening hours to stimulate the use of facilities after the time of peak load recognizes the principle that, so long as out-of-pocket-expenses can be met and a slight profit shown during periods of limited use, it is better policy to stimulate demand than to allow facilities to remain idle.

Rate making for electric railways has recently been subject to experimentation. Rising costs of operation, the increased use of automobiles, and jitney competition have created a real problem for such companies. In contrast to the European practice, where zone fares have been in general use, American practice until recently has been to charge a uniform fare for urban transportation regardless of distance. More recently, however, attempts have been made to institute the zone system. In such cases the plan has been to narrow the urban area and to zone the surrounding area by belts, varying in width, at which points the supplementary fare is charged. Generally speaking, such attempts have not been successful.

A somewhat different approach to the problem of assessing costs to users of service is found in experiments along the line of the weekly pass or the nickel permit. In the former case, a weekly pass is sold entitling the purchaser to an unlimited number of rides during the week. Under the nickel permit plan, the patron purchases a monthly permit which entitles him to an unlimited number of rides at 5 cents. Those who do not hold such permits pay a higher cash fare.

The problem of the electric railway in this country has not been an easy one. In many cases fare increases have not added to revenues. Jitney and automobile competition, and the tendency for the short-haul passenger to walk if fares are

advanced, have made it increasingly difficult to operate profitably, especially in the smaller communities.

Customer ownership of public utilities.—The ownership of public utilities may rest in the municipality, in the hands of stockholders, some possibly absentees, or among the customers of the utility itself through extensive stock ownership. Municipal ownership of public utilities, while not uncommon in this country, is the exception to the rule.⁴⁷ The important exception to this statement is the case of water works, which are frequently owned by the communities they serve.

There is a general feeling among authorities that municipal ownership of utilities, particularly electric light and power, gas, and electric railway enterprises, is not desirable or economical. The opportunity for mismanagement and waste is open, and, under public ownership, there is little incentive for technical improvements. It is too easy, under public ownership, to cover up deficits, or to make them up from taxes.

Where there is absentee ownership of a utility, the stock being held by so-called "banker" or "Wall Street" interests, there is always the possibility of misunderstanding and controversy. In the early history of public utility development, when investment values were not stabilized, it was natural that outside, or business, capital should have been largely used in developing the industry. The customers of utilities financed in this manner were naturally suspicious that exorbitant profits were going to unknown owners, and the ground work was thus laid for unsatisfactory public relations.

Customer ownership was first undertaken in a large way by light and power companies. In 1920 over \$35,000,000 of the securities of such companies were sold to customers. In 1922 sales of securities to customers amounted to \$175,000,000, and by 1924 the figure increased to \$200,000,000. It is estimated at the present time that over \$1,000,000,000

⁴⁷ The City of Seattle has operated its lighting plant since 1904. In 1919 it purchased the Seattle railway system. The major part of the present Detroit Electric railway system was purchased from private owners in 1922. The City of Cleveland operates a lighting plant which does about 13 per cent of the electric light and power business in Cleveland. The City of Los Angeles purchased, in 1922, the local distributing system from the Southern California Edison Company, which it operates in connection with a municipally owned hydro-electric plant.

of public utility securities are distributed among approximately 1,000,000 customers.

Local ownership not only tends to strengthen the financial position of a utility company, but it tends also to lessen the risk of undue lowering of revenues by regulatory authorities. A further advantage accrues from the fact that a continuous market for new securities of the company is afforded. Sales of utility securities to consumers have generally been conducted by the companies themselves with the aid of employees. The expenses of such sales frequently amount to less than bankers' commissions. The investment banking interests, however, favor such a movement, for it not only has the direct effect of stabilizing the market for public utility securities in general, but it is helpful to all the securities of the local company.

Tests of utility development: capital costs.—As previously suggested, the ratio of the cost of public utility properties to operating revenues will range between 4 to 1 and 5 to 1. Such measures of cost, however, lack dependability, because of wide variations in rates and the development of business in different areas. More accurate measures of cost may be had by referring to the standard units of operation for different utilities. In the case of electric railways, the mile of track is a unit; in the case of electric companies, the power station capacity; while the unit of measurement for the gas company is the plant capacity, or annual product.

It is dangerous, of course, to generalize regarding the capital costs that should apply at any time to different companies. Not only are such costs affected by changes in the price level, but conditions vary widely in different localities; customer density, physical characteristics, industrial development, and wealth, all have their effect on the capital cost of erecting a utility plant. With these difficulties in mind the following figures are suggested for what they are worth. The present cost of urban electric power properties will normally range between \$250 and \$450 per kilowatt of station capacity. The cost of constructing urban electric railway properties will normally vary between \$50,000 and \$140,000 per mile of operated track, while in the gas industry the cost of plant will range between \$4 and \$6 per thousand feet of annual sales.

Adequacy of facilities and extent of use.—The investor is not only interested in the capital costs of a particular utility, but in the ability of the company to furnish adequate service to the community and the extent to which the company's facilities are used. In the case of an electric light and power company, the best measure of its facilities is its power station capacity per 1,000 of population served. Granted that territorial requirements vary widely, the normal range of power station installed capacity should run between 125 and 250 kilowatts per 1,000 inhabitants. The availability of electric service is measured by the ratio of meters to population. This ratio normally will fall between 15 and 20 meters per 100 of population served, although in some territories the ratio runs as high as 25 meters.

The best index of the extent to which an electric plant is used is found in the kilowatt hours generated per annum per capita. This ratio will vary, depending on the extent of industrial development, the rates in effect, and other factors; but in the average community it will run between 250 and 500. Power actually sold will average about 20 per cent below this figure. The preceding index may be supplemented by a study of the kilowatt hours generated per annum of kilowatt station capacity. In this way a check is made on the plant's load factor. A normal plant will produce between 2,000 and 4,000 kilowatt hours per kilowatt of station capacity, although some companies exceed 5,000.

A similar series of tests may be made in respect to urban railway systems. The customary measure of railway service is the ratio of track mileage to population, expressed in miles of track per 100,000 population. The normal ratio here lies between 40 and 70 miles. This ratio may be checked by measuring the maximum number of passenger cars in regular operation per 100,000 of population. The ratio here will normally fall between 70 and 120. The extent to which the territory is served may be measured by annual car miles per inhabitant, the range falling between 30 and 50 per unit of population.

The customary test by which the patronage of an electric railway is measured is the revenue rides per annum per capita. The riding habit, as this ratio is called, will range somewhat

less than 100 in cities of less than 25,000 population to over 300 in the larger cities.⁴⁸

The service rendered by a gas company is commonly measured by determining the number of miles of main per unit of population served, usually in terms of 1,000 of population. Granted that the conditions found in different communities vary widely, the normal range may be said to fall between 1.25 and 2 miles per 1,000 of population. In large cities, it is often necessary to convert the actual mains into the equivalent of 3-inch main for comparison. The number of meters per 100 of population, indicating the service development, will usually lie between 12 and 24, while the normal range of gas consumed will lie between 3,000 and 6,000 feet per capita.

Holding company control.—Most readers are undoubtedly familiar with the consolidation movement which took place among American railways between 1890 and 1910, and through which many of the smaller independent roads were grouped into large systems. The same type of consolidation has taken place in the utilities field within the past decade. As a result, there are to-day a relatively few large holding companies instead of innumerable small independent companies. This movement has, perhaps, been most pronounced in the electric light and power field, although the United Gas & Improvement Company operates a very large number of formerly independent gas companies, and the American Water Works & Electric Company controls a large number of private water companies as well as electric power companies. It is also true that many of the large holding companies, which consist primarily of electric light and power subsidiaries, also control local traction and gas companies.

Some idea of the extent to which the holding company has been utilized in the public utility field may be had from the facts disclosed in a recent report of the Federal Trade Commission on Public Utility Holding Companies.⁴⁹ Based on data for 1924 and 1925 it appears that there are at least ten distinct banking or management groups that control a large

⁴⁸ There is a distinct tendency for the riding habit to increase with population, in large cities, approaching the expression CP^2 , where C is a constant for a given city and P its population.

⁴⁹ Senate Document, No. 213, 69th Congress.

portion of the public utility companies of this country. These may be described briefly as follows:

- I. Electric Bond and Share Group. Separated from the General Electric Company in 1924. Associated by stock control, and, in some cases, through management, with the following companies:
 - A. American Gas & Electric Company, which had complete voting control of seventy-eight subsidiaries in Pennsylvania, New Jersey, Michigan, Illinois, Indiana, Ohio. In 1924 gross revenues of these companies were \$49,942,000.
 - B. American Power & Light, which had control of forty-three subsidiaries in 1925, operating in the territory west of the Mississippi. Gross revenues of subsidiaries in 1924, \$33,-129,000.
 - C. Electric Power & Light Corp., which, in 1925, had control of fifteen subsidiaries, with 1924 gross revenues of \$19,-498,000.
 - D. Lehigh Power Securities Corp., with forty-three subsidiaries in the anthracite coal regions of eastern and central Pennsylvania, with 1924 gross revenues of \$15,134,000.
 - E. The National Power & Light Company, with ten subsidiaries in Texas, Arkansas, Alabama, and Tennessee, with 1924 gross revenues of \$13,336,000.
 - F. Carolina Power & Light Co.
 - G. United Gas & Electric Corp., with thirty-one subsidiaries and thirteen leased properties, with 1924 gross revenues of \$6,206,000.
 - H. Southeastern Power & Light Co., with seventeen subsidiaries in 1926, operating largely in Georgia, Alabama, and Mississippi. In 1924 these subsidiaries had gross revenues of \$7,779,000.

DETAIL:

In 1924 Electric Bond and Share Companies.

1. Operated in twenty-nine states.
 2. Had 10 per cent of U. S. total of installed generating capacity.
 3. Had 10 per cent of U. S. total of electric energy generated.
- II. Stone & Webster Group. Until recently has acted largely as an engineering organization. Recently sponsored Engineers Public Service Co., in which to vest control of client companies. In 1919 Stone & Webster, Inc., managed 115 companies in Massachusetts, Virginia, North Carolina, Georgia, Florida, Louisiana,

Texas, Michigan, Missouri, Nebraska, Wyoming, Colorado, New Mexico, Nevada, and Washington. Total investment of managed companies \$171,000,000 in 1924.

- III. Byllesby Group. Controlled over 100 electric, gas, traction, and other companies operating in Northwestern States and Pennsylvania. (The Standard Gas and Electric, and Northern States Power are Byllesby companies.) In 1924 total investment of controlled companies was \$460,000,000.
- IV. Hoydenpyl-Hardy Group, consisting of Hoydenpyl-Hardy & Co., Inc., and three holding companies, the Commonwealth Power Corporation, the Northern Ohio Power Co., and the Electric Railway Securities Corp. The entire group includes some thirty companies with an investment in 1924 of \$250,000,000.
- V. The Doherty and Cities Service Group. Controls approximately one hundred companies in sixteen states. Investment in 1924 was \$204,000,000.
- VI. The Insull Group. This group included, in 1925, the Commonwealth Edison Company of Chicago, the Public Service Co. of Northern Illinois, and two holding companies—the Middle West Utilities Co. and the Midland Utilities Co. The group controlled an investment in 1924 amounting to \$668,000,000.
- VII. North American Group. Closely associated with Electric Bond and Share. Holds controlling interest in electric power companies in St. Louis, Milwaukee, Cleveland, and in California, and large minority interests in Detroit and Washington companies. The group, in 1924, included over sixty companies with a total investment of \$438,000,000.
- VIII. The Barstow Group. Includes some forty gas and electric companies operating in New York, New Jersey, Pennsylvania, Maryland, North Carolina, South Carolina, and Florida. The principal holding company representing this group is the General Gas and Electric Corporation. The total investment in 1924 was \$73,000,000.
- IX. The J. G. White Group. Controls some sixty companies, through the Associated Gas & Electric Company, which operate in New England, New York, Pennsylvania, West Virginia, Kentucky, Tennessee, and the Philippines. Investment in 1924 was \$80,000,000.
- X. Public Service Corporation of N. J. Group. Controls a system of electric plants, electric railways, bus lines, and gas plants in New Jersey.

Economy of operation through holding companies.—There are many logical grounds for the preceding development. In

the first place, economies in operation have been made possible. The central organization or parent company has been able, by virtue of the size of its investment, to employ skilled engineers and to centralize the management of subsidiaries in such a way as to lower overhead expenses. Furthermore, the various independent power units have been linked together in superpower systems. This has enabled the production of power at the most economic points and its distribution over wide areas, including large industrial centers. A further corollary to this has been a more economical utilization of plant. By securing a distribution of consuming areas, it has been possible to keep the plant operating at high capacity a greater number of hours of the day than is the case with a local plant supplying a local community. An electric generating unit must stand ready to meet the "peak of the load." The holding company, by serving industrial areas and rural communities with the same generating equipment and by combining electric railway service with electric power service, is able to get a more uniform consumption of power throughout the day and hence to increase its "load factor." Furthermore, by combining wide areas through so-called "superpower hook-ups," the diversity factor is likewise increased.

Banker control, facilitation of, by holding companies.—

The holding company device has also enabled the banker to control a large number of companies with a relatively small investment of his own and to obtain on this investment a high percentage of return. Assume, for example, that there are four independent operating companies in a given area, each capitalized at \$2,000,000, represented by \$1,000,000 in bonds and \$1,000,000 in common stock. The owner of \$500,000 of the common stock of any of the independent companies, or 50 per cent thereof, would have effective control. A holding company is now formed with a capitalization of \$2,000,000, of which \$1,000,000 is nonvoting preferred stock, or bonds, and \$1,000,000 is common stock. The preferred stock and 49 per cent of the common stock is sold to the public; the other 51 per cent is held by the banker, who, it may be assumed, puts in \$510,000 of his own money. The \$2,000,000 so obtained is then used to acquire 50 per cent of the common stock of each independent company.⁵⁰ This gives the holding com-

⁵⁰ No effort is made here to adjust the prices of the various securities to

pany control of each of the operating companies with combined assets of \$8,000,000. The banker, on the other hand, with 51 per cent of the common stock of the holding company, has control of it, and, therefore, controls the entire group of companies with only \$510,000 cash investment. In practice, this method of control is carried even further and the purchase of the stock of operating companies is frequently obtained by the sale of collateral trust bonds, at fixed rates of interest, or by preferred stocks with limited dividend rates. This, of course, throws the balance of earnings, above the bond interest or preferred dividend requirements, over to the common stock equity of the holding company.

There are, indeed, obvious dangers from overextension through the device of the holding company. In the first place, pyramiding may go on to a point where the controlling bankers have only a small investment of their own in the properties. Management without financial responsibility may or may not be conservative. Another element of danger is found in the position of the bonds and preferred stocks of the holding company which has overextended operations. Such securities are ordinarily classed as investments, yet they are often so far removed from the actual operating properties as to be highly speculative. The extension of holding companies has also been furthered by purchasing operating companies at apparently high prices. Whether the economies of centralization can overcome the additional capital costs incurred through such purchases time alone will tell. In any event, the pace at which holding companies in this field have recently expanded warrants the exercise of some caution in purchasing their securities.⁵¹

Difficulty of analyzing holding companies.—The holding company also presents problems of analysis to the investor. Not only are the accounts of holding companies sometimes furnished in such a way as to cover up many of the points necessary for accurate analysis, but even where full informa-

a reasonable and practical situation, as the main purpose is to explain the use of holding companies to concentrate the control of a number of independent companies in the hands of an individual by means of a small investment.

⁵¹ An excellent attack on the extension of the holding company in the public utility field may be found in Ripley, William Z., "Main Street and Wall Street," 1927.

tion is given it is often very complex. The larger companies furnish various services, such as electric light and power, electric railway transportation, gas, and water. Operations are also carried on over wide and diversified areas that are subject to territorial variations and different population densities. The profits of the holding company are also hard to define. They may be derived from dividends received from participation in subsidiary earnings on the basis of stock held, from furnishing service to subsidiaries, and from the purchase and sale of stocks. There is also the difficulty of determining exactly what equities precede the obligations of the holding company and the order of precedence.

Position of public utilities as investments.—Despite the objections that may be raised against the extension of the holding company, public utility securities as a class must be accorded a high investment standing. There are exceptions, to be sure, notably in the electric railway industry; but on the whole, the record of public utilities has been most favorable.

The stability of utility investments arises partly from the nature of the industry and partly from the existence of public control. The fact that public utilities frequently operate under monopoly conditions eliminates many of the hazards of competition which encompass the ordinary industrial. Furthermore, utilities operate with a minimum of investment in inventories, a fact which enables them to escape the dangers of inventory fluctuation.⁵² The credit risk, with the somewhat analogous danger of order cancellation, is lacking in the public industry, a further reason for stability in earning power. Consumers are either required to pay cash, as in the case of electric railways, or else are rendered monthly statements which must be promptly paid, otherwise service will be discontinued. Finally, the necessity of the service which they render enables utilities accurately to gauge demand over a period of years and to plan extensions in an intelligent manner.

In view of the stability of high grade public utility securities as investments, it is but natural that there should be a growing movement among state legislatures to legalize the bonds of high grade public utilities as investments for savings

⁵² See *Annalist*, October 22, 1926, p. 531, Littleton, A. C., "The Current Ratio in Prosperity and Depression—Utilities Show Great Stability."

banks and trust companies. As early as 1916 the Investment Bankers Association actively sponsored a uniform savings bank law designed to legalize investments in public utility bonds.⁵³ In 1926, some ten states had so legalized public utility investments in one form or another, including Massachusetts, Connecticut, and New Jersey.⁵⁴

The yield on public utility bonds during the past twenty years has averaged from 1 to 1½ per cent higher than the yield on high grade municipal and railroad bonds. There is a distinct tendency now for this differential to grow less. At the present time (1928) the differential between high grade rails and public utilities is less than one-half of 1 per cent. The growing popularity of utility bonds as investments, crystallization of ideas on commission control, and a growth in the number of states legalizing public utility bonds for trust fund and savings banks investments have been responsible for this tendency. It is not improbable that this spread will ultimately disappear.

⁵³ Bulletin Investment Bankers Association of America, Vol. V, No. 2. It is interesting to note the prerequisites here proposed in respect to the selection of legal public utility bonds. In substance these may be described as follows:

1. It is assumed that gross property values will normally be between 4 and 5 times gross revenues.

2. On this basis, assuming a normal operating ratio of between 50 and 60 per cent, charges should range between 23 and 30 per cent of gross.

3. Net earnings should be 1¾ times charges.

4. The company should have at least \$500,000 gross earnings, except in the case of telephone companies, where the gross should be \$1,500,000.

5. Not more than 10 per cent of gross should be obtained from one customer.

6. Franchises should be satisfactory.

7. Investments should be limited to operating companies.

8. Securities should be a direct lien upon property, except where collateral consists of an issue of first mortgage bonds.

⁵⁴ A bill presented to the New York Legislature, February, 1926, designed to make the securities of telephone, electric light and power, and gas companies legal investments for savings banks in the state of New York passed the lower house but lapsed in the Senate. There is renewed agitation for the passage of a similar bill.

CHAPTER XVI

INVESTMENT CONSIDERATION OF SPECIAL CLASSES OF UTILITIES

On account of the wide differences found among the various types of public utilities, such as electric light and power, gas, telephone and telegraph, water, and electric railway companies, it will be necessary to devote some independent discussion to each of the more important of these groups in developing the subject of investment analysis as applied to utilities.

Electric Light and Power Securities

Recent growth.—We will first consider electric light and power companies. The growth of this industry has indeed been one of the outstanding phenomena of the present century. Some idea of the magnitude of this development may be had by reference to certain pertinent statistics regarding the industry. At the beginning of 1902 capital invested therein stood at \$639,125,363; it is estimated that on January 1, 1927, capital invested stood at \$8,400,000,000. Combined gross revenues of central stations amounted to \$85,700,000 in 1902, whereas in 1926 gross revenues are estimated to have reached a total of \$1,673,200,000. Power generated in 1902 amounted to 2,507,051,115 kilowatt hours; in 1926 69,158,114,000 kilowatt hours were generated.¹ These figures might be supplemented at length by others which would serve only to support the idea already conveyed that this industry has enjoyed an exceptionally prosperous career during the past quarter century.

¹ Bonbright Survey, "Electric Power and Light Companies of the United States" (4th ed.), 1927, p. iv. The last census of electrical industries was taken in 1922. Subsequent figures are necessarily estimates, but are sufficiently accurate to show the general tendency of growth.

Causes for recent development.—The principal causes for this growth are already familiar to most of us. Electricity has rapidly supplanted gas and kerosene as a means of residential illumination, not only because of its greater convenience, but because of greater safety and economy. Industrial uses for electricity have likewise been widely extended. Many manufacturing concerns that formerly operated their own independent power plants have found it more economical to abandon these and to purchase electric power from central stations.² Industrial use of power has been further accelerated by the ease with which individual motors can be connected directly with the operating machines in a factory. In this way electric energy is transmitted through the plant by means of wires and transformed into effective driving power directly at the machine. The use of cumbersome belts and shafting, with consequent loss of power through friction, is thus eliminated.

The domestic uses for electric power are also being rapidly developed. The modern housewife to-day does a large portion of her work by electricity. The washing machine, the vacuum cleaner, the electric refrigerator, electric percolators, flatirons, and ironers are some of the more common household devices requiring electric current. The development of the radio industry has likewise increased the use of electrical current.

Despite the phenomenal growth that has already taken place in the electric light and power field, it appears that the industry has by no means reached its limit of expansion. Quite independent of the normal development that may be expected to take place as population increases, it can hardly be assumed that the *per capita* consumption of electricity has reached its limit. At present it is estimated that only 65 per cent of the industrial power load is electrically generated while less than 43 per cent of the population of the United States live in electrically lighted dwellings. Furthermore, 88 per cent of the 6,000,000 farms in the United States are yet without electricity.³ There is also an opportunity for extensive

² It is estimated that in 1904 more than 72 per cent of the electric energy consumed by industrial companies of the United States was generated in their own plants. In 1920 only about 39 per cent came from such private generating plants. Bonbright & Co., "Public Utility Points" (4th ed.), p. 2.

³ Bonbright & Co., "Public Utility Points" (4th ed.), p. 2.

electrification of railroads, while there are great possibilities in the future development of the moving picture and of electric display signs. Prospective growth has an important bearing upon the future investment status of these enterprises.

Stability of earnings in electric light and power investment.—From the standpoint of stability of earnings, the electric light and power industry is especially favorable to the investor. The annual combined gross revenues of central stations have never, since the beginning of the industry, shown a decline.⁴ It is further interesting to note that the chances of default are especially low among electric light and power securities. As previously suggested, for a period of thirty years prior to the World War the risk of receivership per \$100 of securities outstanding for industrial concerns was \$2.07; for railroads, \$1.84; and for public utilities, \$0.37. On January 1, 1922, it was estimated that there were outstanding in railroad bonds and junior securities \$11,931,000,000, of which \$101,117,600 were in default. At the same time there were outstanding \$2,592,000,000 electric light and power obligations, of which but \$3,690,000 were in default. At this time, therefore, .85 of 1 per cent of railroad securities were in default as compared with only .014 of 1 per cent of power and light securities.⁵

Operating companies distinguished from holding companies.—In any analysis of the investment status of electric light and power companies, we must first distinguish between operating companies and holding companies. In the latter case,

⁴ Bonbright Survey, "Gross Revenues of Central Stations" (4th ed.), 1927, p. iv.

Year	Gross Revenues	Year	Gross Revenues
1913	\$314,000,000	1920	\$ 882,750,000
1914	336,980,000	1921	994,400,000
1915	360,000,000	1922	1,072,120,000
1916	436,000,000	1923	1,269,550,000
1917	526,894,000	1924	1,354,570,000
1918	664,850,000	1925	1,506,000,000
1919	773,650,000	1926	1,673,200,000

⁵ Studies of Pennsylvania Committee on Public Utility Information. In the year ended November 1, 1926, the total of all public utility bonds in default, including gas, electric light and power, and traction bonds, amounted to \$129,098,000. Most of the bonds in default at this time were traction bonds. *Wall Street Journal*, December 1, 1926.

it is frequently impossible to get all the specific information necessary to make as detailed an analysis as is desirable. Particularly is it true that the presence of gas, electric railway, hydroelectric, and steam generating plants, all under control of the same holding company, makes it impossible to use the same unit basis for comparative purposes as is sometimes possible in the case of individually operated companies.⁶ There is, in fact, a wide difference between operating companies and holding companies, so far as investment analysis is concerned. Our first attention will be given to the analysis of operating companies, that is, to those concerns which operate directly the properties they own, as opposed to the holding company, which controls a group of subsidiary operating companies.

Further classification of operating companies: Steam versus Hydroelectric Generation.—Even in the case of independently operated electric companies it is necessary properly to classify the company which it is desired to analyze before the statistics available have real significance. Indeed, such classification is the first step in any analysis of electric light and power companies and may be given more than passing attention at this time. The first classification generally made is according to the method of generation. There are, for instance, hydroelectric, steam generating, and combined hydroelectric and steam generating plants. The operating expenses of hydroelectric plants are naturally very much lower than are those of steam generating plants. In the former case the cost of fuel and the attendant labor connected with handling it are avoided. On the other hand, it usually costs from two to four times as much to build a hydroelectric plant as it does to build a steam plant with equal capacity. Thus, while the operating expenses of a hydroelectric plant are appreciably lower, investment carrying charges, interest, taxes, and depreciation are decidedly higher.

There are other cost factors in hydroelectric generation which must be kept in mind. Frequently the source of the water power is far removed from the consuming area, a fact which requires the transmission of current over a considerable

⁶ See also page 405, for other difficulties of analysis. The problem will become clearer, perhaps, after the student has read the subsequent section on holding company analysis.

distance. This means a loss in power, and a further investment of funds in transmission lines. Furthermore, companies relying on water power usually find that there is a wide difference between the power furnished at different seasons of the year. For this reason the hydroelectric plant is frequently supplemented by a steam plant which can carry the load during periods when water power is insufficient. Such additional investment, while necessary, is frequently unprofitable, because it is used for only a relatively short time during the year. When one considers the improved efficiency of steam generating equipment, whereby the consumption of coal per kilowatt hour has been reduced from twelve to two or three pounds, the present advantages favor the modern steam plant as a low cost, steady producer.⁷

There are, on the other hand, a few exceptional locations where hydroelectric stations can be built and operated economically. Furthermore, the hydroelectric station is often used economically in super-power areas, or by large holding companies, where it is combined with steam stations. Under such systems, power is normally distributed over wide areas and the power generated by a hydroelectric unit can be utilized without heavy additional transmission investment by combining it with steam generating plants, which means a pooling of needs for auxiliary steam generation. Under such conditions, also, the disadvantages arising from variations in the amount of water power furnished are likewise minimized.⁸

Classification.—Another basis for classifying electric light and power companies is according to the disposition of product. Some plants merely generate power and dispose of this on a wholesale basis to distributing companies. It is becoming increasingly common, in financing extensions to existing properties, to organize a separate company whose only business is the manufacture of power. Such a company does its own independent financing and, when completed, either leases its property to a distributing company or contracts with one or

⁷ See "Proceedings," National Electric Light Association, Vol. 81, 1924, "Report of Rural Electric Service Committee," Appendix A, p. 66ff.

⁸ On March 1, 1925, it was estimated that of our total minimum potential water power, which amounted to 34,818,000 horse power, but 30 per cent, or 10,400,000 horse power, was developed.

more of the distributing companies to take its entire output.⁹ In other cases there are companies, such as the New York & Queens Electric Light & Power Company, which do almost no manufacturing, but purchase their power from other companies and retail it. The great majority of electric power and light companies, however, do both types of business, owning, as they do, both generating and distributing facilities.

It would, of course, be possible to continue a discussion of the different methods of classification still further. We might, for instance, classify utilities according to the nature of the territory they serve, according to the types of customers to which they furnish power, or according to the nature of their capital structure. Yet too exhaustive a plan for classification tends only to confuse the problem in the mind of the investor. Therefore, only the more important bases of differentiation have been presented.

Analysis by use of ratios.—The first type of individual company to be analyzed is the more or less independent operating company. The analysis will be facilitated by the study of certain significant ratios with respect to efficiency, operation, or capitalization, by which one company may be compared with other similar companies. The problem as it presents itself here is not unlike that which existed in connection with certain groups of industrials. Operating conditions are sufficiently similar throughout the field to permit the use of "common denominators," by which the figures of various companies may be reduced to standard ratios for purposes of comparison.

Capitalization and kilowatt capacity.—Let us consider first the matter of capitalization and kilowatt capacity. It is at once apparent that the kilowatt capacity of a plant represents the rate at which energy can be generated and indicates the

⁹ Among the more important of such generating companies may be listed:

- Public Service Electric Power Co.
- Wisconsin Electric Power Co.
- Ohio River Edison.
- Union Electric Light & Power of Illinois.
- Montauk Electric Co.
- Middle West Power Co.
- Indiana Electric Corp.
- Metropolitan Power Co.
- New Jersey Power Corp.
- Kentucky Hydroelectric Co.

amount of energy which the plant is capable of generating. Since electric energy is its stock in trade the maximum of gross revenues it can produce will depend on its possible output. It is further evident that the lower the capitalization of a given plant in relation to possible output, the more favorable the situation, other things being equal. The combined generating capacity of eighty-four power and light companies at the close of 1923 was 10,394,000 kilowatts, whereas the total combined capitalization of these companies was \$3,151,018,000. The average capitalization per kilowatt of generating capacity was thus about \$303. The combined gross revenues of these eighty-four companies was \$645,391,000. In other words, combined capitalization was approximately five times gross revenues.¹⁰

We may accept as reasonably correct the statement that the cost of urban electric power properties, under conditions now existing (1928), will range from \$250 to \$350 per kilowatt of rated generating capacity. The lower limit will be approached in smaller cities, where the business is reasonably compact, and where no elaborate underground distribution is required. In larger communities, where expensive underground transmission and substations are required, the upper limit will be reached. In other localities requiring an unusually complicated system or in sparsely settled outlying territory the unit cost may exceed the upper limit by a considerable margin.

The customary distribution of this aggregate investment over the various items involved is shown in the following table:¹¹

<i>Class of Property</i>	<i>Normal Range of Percentage</i>
Power Station	40 to 50
Transmission Lines and Substations.....	0 to 10
Distribution System, Overhead.....	20 to 35
Distribution System, Underground.....	0 to 20
Service Connections and Meters.....	12 to 18
Miscellaneous Buildings and Equipment.....	2 to 5

Station and distribution facilities.—The distinction between investment in station and in distribution facilities is an important one. Whereas it is true that the service actually sold by

¹⁰ Bonbright & Co., "A Study of Power and Light Investment," 1924.

¹¹ Nash, "The Economics of Public Utilities," p. 316, 1925, McGraw-Hill Co., New York.

electric light and power plants is kilowatt hours produced and delivered, nevertheless, it is also true that a company which serves a densely populated area can produce and sell a given amount of current with a lower investment in transmission equipment than can a company which serves a sparsely inhabited area. The *production and delivery cost* is higher in the latter case than in the former. For this reason, it is to the advantage of the company to minimize its investment in transmission lines as compared with investment in plant generating capacity. No set rules can be laid down as to what constitutes the proper proportion of total investment that should be allocated to plant and transmission, although it is generally accepted that, in an average case, the plant investment does about equal distribution investment. The relation between investment and the extent of business for Massachusetts companies in 1915 is shown in the following table:¹²

INVESTMENT AND EXTENT OF BUSINESS, 1915

(Massachusetts Companies)

<i>Average per Plant</i>	<i>Municipal</i>	<i>Private</i>
Total Investment	171,990	310,840
Station Investment	97,138	150,999
Distribution Investment	74,852	159,841
Kilowatt Capacity	951	1,366
Average kw. per Dynamo.....	269	314
Current Delivered (kw. H).....	881,914	1,437,544
Length of Streets with Overhead (miles).....	41.1	55.9
Length of all Lines (miles).....	174	256.1
Length of Conduits.....	.....	21.1
Length of Cables in Conduits (miles).....	.....	123.3
Number of Street Lamps.....	673	677
Number of Poles.....	1,355	2,655
Number of Customers.....	1,063	1,377
Age of Station Units (years).....	9.1	7.6

That is, the average company should not be required to invest much more than one dollar in distributive facilities for each dollar invested in station equipment.

Per customer and per capita investment.—The capital investment of an electric light and power company may be reduced to a “per customer” and a “per capita” basis for purposes of investment analysis by dividing the capital investment

¹² From “The Results of Municipal Electric Lighting in Massachusetts,” p. 160, by Edmond E. Lincoln, 1918.

of the company by the number of customers actually connected, and by the population of the area served. "Per capita investment" (which is the latter ratio) furnishes rather general information only when used alone. When used with "per customer" investment it is more illuminating. For example, the fact that "per capita" investment has been increasing indicates, (1) more customers per unit of population, (2) larger utilization per customer, or (3) both. Increased "per capita" investment, however, does not indicate which of these factors is effective, nor the degree of effectiveness. By comparing "per capita" investment with "per customer" investment, however, it is possible to draw further deductions. Thus, if both "per capita" investment and "per customer" investment have increased, all of the "per capita" increase cannot be accounted for by an increase in the number of customers. If the "per customer" increase in investment is greater proportionately than "per capita" increase in investment, the factor of increased utilization has played a larger part than if "per customer" increase in investment had been less proportionately than the increase in "per capita" investment.

The use of these two ratios may be effective also in gauging the future development of a company, although care must be used in such an analysis. Thus, if the "per capita" investment of a company shows a rapid increase, this may indicate that the company will, in the near future, be in a position to increase the number of users (or customers) with a less than proportionate investment "per new customer." On the other hand, after an initial program of development has been carried out, during which "per capita" and "per customer" investment both increase, the former ratio may remain more or less constant while per customer investment decreases. This results from the conversion of potential customers to actual customers. Finally it may happen, after intensive development of the area, that it is necessary to increase "per capita" investment without a corresponding decrease in "per customer" investment, on account of the greater use of facilities made by existing customers. In any analysis of this kind, however, it is necessary to consider the nature of the demands placed on the company by its customers, the manner in which the load factor is affected, and the extent to which the diversity factor is changed.

Operating ratios.—The significance of operating ratios is much the same here as in the case of industrials, except that there is likely to be a somewhat greater difference in this ratio among different public utility companies than is the case with industrials. In the first place, there is usually a wide difference between the operating ratios of hydroelectric companies and steam generating companies. A ratio of from 40 to 60 per cent is probably the normal ratio for the former class, although in some cases, especially where the company sells its current largely at wholesale, its operating ratio may be under the suggested limits. Steam generating plants, on the other hand, normally have a somewhat higher ratio, ranging from 60 to 75 per cent, although the question whether the company sells its product at wholesale or retail will again affect the ratio. Companies which do largely a wholesale business naturally have the lower ratios.

Capital structures, earnings, and charges.—While hydroelectric companies have lower operating ratios than do steam generating companies they will, on the other hand, have a heavier capital investment and correspondingly heavier fixed charges. Many of the hydroelectric companies, in fact, do a considerable portion of their financing by bonds, a situation that is partially warranted, at least, by the heavier investment in fixed assets. The amount of bonds outstanding determines the interest charges of the company. It is always of great importance to compare these interest charges with earnings available for interest payments in analyzing the investment status of the bonds of a particular company. It is customary for the investor to expect the company to have earned its interest charges at least two times. A bond on which interest is not at least twice earned in all probability would be considered somewhat speculative. Some of the stronger companies, on the other hand, earn their interest charges from at least $2\frac{1}{2}$ to 3 times.

The relation of bonded debt to assets is closely correlated with the safety factor of a bond as measured by earning capacity. In a field where there is as close a relationship between normal earning power and assets as is found in the public utility field, one may safely assume that a bond on which interest is earned at least twice should likewise be secured by assets at least equal to twice the amount of bonds outstanding.

That is, the company should not be bonded substantially in excess of 50 per cent of the value of its plant.

The same comparison that is made in reference to earnings and fixed charges may be made in reference to earnings available and preferred dividend requirements. A preferred stock is not, as a rule, regarded as conservative, unless preferred dividend requirements are at least twice earned, preferably more. An interesting problem involving the relation of earnings and preferred dividend requirements arises out of the use of consolidated income accounts in connection with holding companies.¹³

Earnings per share of common stock.—It is impossible to say what a company should earn per share on its common stock, because the capital structures of companies vary widely. It is a fact, however, that a fairly definite relationship exists between the market prices of common stocks of utility companies and per share earnings at any given time. We may lay down the broad rule that the stock of an electric light and power company, unless influenced by special considerations, such as merger possibilities, normally, will sell at a price between 12 and 18 times earnings per share after depreciation, or approximately 12 times earnings per share before depreciation.¹⁴

Merger possibilities in electric light and power field.—There are other factors of less definite character that should be taken into account when investing in the securities of electric light and power companies. Consider first the question of merger possibilities. As already mentioned, the past decade has witnessed a distinct tendency toward the formation of large holding companies among utilities. Independent concerns have been merged into, or consolidated through, small holding companies, which, in turn, have been acquired by still larger companies. Frequently the acquisition is effected by the ex-

¹³ See p. 413, following.

¹⁴ This statement applies to the present market conditions during the first half of 1928. It is impossible to make a categorical statement of this kind to apply for all times. It is an easy matter, however, to determine at any time what the average ratio should be and, with such ratios in mind, the investor has a rule-of-thumb method for testing the value of common stocks. For a detailed study of the relation between earnings and market value of the common stocks of holding companies see p. 416, following.

change of the stock of the holding company for the stocks of the merged company on an attractive basis. In this operation it is impossible for the holding company to go into the market and bid for the stock. Such a policy would result in a highly inflated price. Accordingly, the holding company generally negotiates quietly with several of the large holders of the stock of the company to be acquired and a price, or ratio of exchange, is agreed upon satisfactory to all. Thereupon an offer is made to all the stockholders of the independent company to the effect that its shares will be purchased, or exchanged for stock of the holding company, on certain specified terms. The final consummation of the offer is usually contingent on a certain per cent of the common holders assenting to the plan by depositing their stock with a depository. It frequently happens that the holding company is willing to pay considerably more for the stock of the acquired company than it would normally bring on the market.¹⁵

The nature of the territory served, the present stage of its development, and the opportunities for future development are other matters of importance to the investor. Especially is it desirable to avoid investment in localities that are decadent or on the decline. On the other hand, communities that are rapidly expanding offer rather exceptional opportunities to the investor in public utilities. The utilities serving such areas are able profitably to employ surplus earnings in extensions to plant. Also such further additions and extensions as are needed may be financed wholly or partly by bonds on which a rate of interest of 5 or 6 per cent only is paid. If the utility is able to earn 8 per cent on the fair value of its property, the earnings of the common stock are correspondingly in-

¹⁵ Our recent financial history abounds in examples of this kind. The reader, however, is referred particularly to the acquisition of the entire common stock of the Mississippi River Power Company by the North American Company through exchange of $1\frac{2}{3}$ shares of the latter for each share of the former. Those holders desiring to receive cash had the option of taking \$100 cash instead of the stock of the North American Company, *Commercial and Financial Chronicle*, Vol. 121, 1909. The common stock of the Mississippi River Power Company sold as low as \$37 a share in 1925 before the talk of a merger. This example, as well as many others that are readily available, shows the possibilities of profit through merger with a larger company. It is this fact that holds the stocks of some companies above the prices at which, normally, they would sell.

creased. In still other cases valuable rights are given to stockholders permitting subscription to additional stock at less than the current market price.

Analysis of holding companies more complex.¹⁶—Analysis of individual operating companies is simpler by far than that of the holding company with a complex capital structure and consisting of a group of more or less heterogeneous operating companies, some steam generating, some hydroelectric, others engaged in the manufacture of gas, and still others, in furnishing electric transportation. The fact that nearly all holding companies are composed of operating companies of a widely diverse character makes it impossible to go beyond a financial analysis thereof. At least the average investor, who does not have at his disposal all the data respecting the individual companies, must content himself with an analysis based largely upon the combined or consolidated accounts of the holding company.

Analyzing holding company investments.—The significance of consolidated accounts in analyzing holding company investments leads first to a brief discussion of consolidated statements and their significance to the investor. The purpose of the consolidated statement is to show the combined assets and liabilities and the operating results of a group of companies. The process of consolidation, therefore, consists of combining the asset and the liability accounts of all the companies of the group into one balance sheet, and of doing the same thing with the income accounts, eliminating in both cases all inter-company items.

Suppose, for example, that we have two companies, A and B, of whose common stock 90 per cent in each case is owned by holding company H. The independent statements of all three companies we will assume to be as follows:

¹⁶ Holding companies are discussed under the general heading, "Electric Light and Power Securities." Most holding companies in the public utility field consist largely of electric light and power companies, with subsidiaries in other fields in the minority.

BALANCE SHEET COMPANY A

<i>Assets</i>		<i>Liabilities</i>	
Plant and Equipment.....	\$500,000	Capital Stock	\$500,000
Inventories	200,000	Accounts Payable	250,000†
Accounts Receivable	250,000*	Surplus	250,000
Cash	50,000		
	<u>\$1,000,000</u>		<u>\$1,000,000</u>

BALANCE SHEET COMPANY B

<i>Assets</i>		<i>Liabilities</i>	
Plant and Equipment.....	\$700,000	Common Stock	\$300,000
Inventories	200,000	Preferred Stock 7%	300,000
Accounts Receivable	100,000	Bonds 6%	300,000
Cash	200,000	Accounts Payable	150,000‡
		Surplus	150,000
	<u>\$1,200,000</u>		<u>\$1,200,000</u>

BALANCE SHEET COMPANY H

<i>Assets</i>		<i>Liabilities</i>	
Investments	\$720,000§	Common Stock	\$400,000
Accounts Receivable	180,000¶	Preferred Stock 6%	300,000
Cash	250,000	Bonds 6%	300,000
		Accounts Payable	100,000
		Surplus	50,000
	<u>\$1,150,000</u>		<u>\$1,150,000</u>

* Includes \$50,000 owed to it by B.

† Includes \$50,000 owed to holding company H.

‡ Includes \$50,000 owed to A.

§ Includes \$450,000 common stock of A and \$270,000 common stock of B, both carried at par. The balance of this stock is owned by the public.

¶ Includes \$50,000 owed by A.

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It is now desired to consolidate these statements and to eliminate all intercompany items.¹⁷ We shall start first with the capital structure of the holding company as shown by the combined statement. Our effort here is to state what stocks and bonds are owned by the public. This we find to be as follows:

Common Stock of H.....	\$400,000
Preferred Stock of H.....	300,000
Bonds of H	300,000
Bonds of B	300,000
Preferred Stock of B.....	300,000
Common Stock of A and B Held by Public..	80,000

¹⁷ The mechanics of this operation may be illustrated by telescoping the three statements and eliminating intercompany items in the following manner:

			<i>Eliminate</i>	<i>Amount</i>
			<i>Intercompany</i>	<i>at Which</i>
			<i>Items</i>	<i>Carried as Con-</i>
<i>Assets</i>				<i>solidated B. S.</i>
Plant and Equipment	A	500,000		
	B	700,000		\$1,200,000
Inventories	A	200,000		
	B	200,000		400,000
Receivables	A	250,000	\$50,000	
	B	100,000		
	H	180,000	50,000	430,000
Cash	A	50,000		
	B	200,000		
	H	250,000		500,000
Investments	H	720,000	720,000	
<i>Liabilities</i>				<u>\$2,530,000</u>
Capital Stock	A	\$500,000	450,000	
	B	300,000	270,000	\$80,000
	H	400,000		400,000
Surplus	A	250,000		
	B	150,000		
	H	50,000		450,000
Preferred Stock	B	300,000		300,000
	H	300,000		300,000
	B	300,000		300,000
Bonds	B	300,000		300,000
	H	300,000		300,000
Accounts Payable	A	250,000	50,000	
	B	150,000	50,000	
	H	100,000		400,000
				<u>\$2,530,000</u>

INCOME ACCOUNT FOR H

Dividends and Interest Received	\$40,500*
Miscellaneous Expenses	2,000
<hr/>	
Available for Interest and Dividends....	\$38,500
6% on Bonds	18,000
<hr/>	
	\$20,500
6% Dividends on Preferred.....	18,000
<hr/>	
Balance for Common and Surplus.....	\$ 2,500
Per Share Common.....	\$.62½

* Including \$22,500 from A and \$18,000 from B, this being 90% of the dividends of these companies.

Before attempting to consolidate the earnings of these companies several points should be clearly understood. In the first place, it should be borne in mind that Company H, which owns 90 per cent of the stock of A and B, really has an equity in the surplus earnings of these companies, to the extent of 90 per cent of \$25,000 and \$11,000, respectively, in addition to the 5 per cent dividend received on its stock holdings. In other words, the true earnings of H, based on its proportionate share of the surplus of A and B, would be determined as follows:

Dividends and Interest Received	\$40,500
Plus 90% of Additional Earnings of A and B	32,400
<hr/>	
Real Earnings of H	\$72,900
Less Miscellaneous Expenses	2,000
<hr/>	
Available for Bond Interest.....	\$70,900
Less Bond Interest	18,000
<hr/>	
	\$52,900
Less Preferred Stock Dividends.....	18,000
<hr/>	
Net Available for Common.....	\$34,900
Net per Share.....	\$ 8.73

Thus we find that net per share of common really amounts to \$8.73 instead of 62½ cents per share.

The second point of interest is that the bonds and preferred stocks of the holding company have a claim on operating earnings which is preceded by the claims of (1) bonds, (2) preferred stocks, and (3) common stocks of the operating companies making up the holding company. This is so because

the principal sources of income of the holding company are the dividends and interest received from its security holdings in the subsidiary companies. In the case of a holding company owning only common stocks, its sole source of earnings is the dividends declared on such stocks. Accordingly, there are no earnings for its bonds until obligations of the underlying companies prior to their common stocks have been met and dividends declared on such stocks. This situation will appear in the consolidated statement of earnings which we will now arrange in full.

CONSOLIDATED INCOME ACCOUNT, COMPANY H AND
SUBSIDIARIES

(Year Ended December 31, 1925)

Gross Revenues	\$330,000
Operating Expenses	210,000
<hr/>	
Net Available for Interest.....	\$120,000
Interest on Subsidiary Bonds	18,000
<hr/>	
	\$102,000
Dividends on Subsidiary Preferred Stocks.....	21,000
<hr/>	
Net from Subsidiary Operations.....	\$ 81,000
Proportion of Net Belonging to Subsidiary Common Stocks Held by Public.....	8,100
<hr/>	
Balance Available for H.....	\$ 72,900
Less Expenses	2,000
<hr/>	
	\$70,900
Interest on H's Bonds.....	18,000
<hr/>	
	\$52,900
Dividends on H's Preferred Stock.....	18,000
<hr/>	
Available for Common Stock Dividends and Surplus. \$	34,900

The form used above is somewhat more detailed than that customarily used and is presented in order to show exactly where each charge comes in proper order and to enable the student the better to grasp the results of holding company accounts. Frequently, in practice, the various accounts are not so clearly stated as above and it is often necessary to make certain adjustments in order to interpret accurately their true significance. Often the consolidated income account is presented in a somewhat abridged form and is more or less un-

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intelligible, depending on the information the directors of the company wish to divulge. In fairness, it must be said, however, that many of the larger companies now give very complete information. The following income account for the American Water Works & Electric Co., Inc., for the years 1924 and 1925, will serve to show the form in which the investor may reasonably expect to find income account data shown on a consolidated basis.¹⁸

INCOME ACCOUNT—AMERICAN WATER WORKS AND ELECTRIC CO. (Year Ended December 31)

<i>Calendar Years</i>	<u>1925</u>	<u>1924</u>
Gross Operating Earnings	\$41,055,906	\$38,355,679
Oper. Expense, Taxes, and Maintenance.....	21,162,333	20,859,862
Federal Taxes	804,937	708,838
Gross Income	\$19,088,635	\$16,786,979
Interest and Amortization of Disc.	8,865,104	8,211,449
Preferred Div. of Subsidiaries.....	3,531,825	2,947,769
Minority Interest	511,154	441,404
Reserve for Renewals, Replacements, and Depreciation	2,863,037	2,575,919
Net Income	\$ 3,317,515	\$ 2,610,437
Previous Surplus	6,100,348	5,452,437
Other Credits	79,685	79,685
Total Surplus	\$ 9,497,548	\$ 8,142,559
Deduct		
Credits to Savings Fund	\$ 79,685	\$ 79,685
Discount and Expense on Sale of Railway Stocks..	129,320	178,664
Special Appropriation for Dep. Res.	700,000	830,000
Sundry Adjustments	Cr. 117,813	Cr. 27,981
Application to Minority Interests	Cr. 170,135	Cr. 201,656
Dividends Paid Am. W. W. & El. Co.		
1st Preferred	869,472	633,500
Participating Preferred	320,157	550,000
Common (Cash)	638,138	
Common (Stock)	549,930	
Profit and Loss Surplus.....	\$ 6,498,793	\$ 6,100,348

¹⁸ Taken from Twelfth Annual Report, year ended, December 31, 1925. Full report given in *Commercial and Financial Chronicle*, Vol. 122, p. 2793. Balance sheets for this company are there given for years 1924 and 1925. As in the preceding case it should be noted that dividends on preferred stocks of subsidiaries and minority interests are properly provided for. On the other hand, all interest, both on subsidiary bonds and bonds of the holding company, are thrown into one account. This is not satisfactory, for the reasons already discussed.

Financial analysis of holding companies.—In analyzing the investments of holding companies in the public utility field, we again find that certain specific ratios are available which tell the story in part, while further study should always be given to more general factors, such as management, territory served, and composition of operating companies. The most significant ratios are: operating ratio; ratio of depreciation to gross revenue; number of times interest charges are earned; the relation of bonded debt to property investment; number of times preferred dividends are earned; earnings per share of common stock; and the relation of gross revenue to capitalization.

Operating ratios.—The operating ratio of the normal holding company will run somewhere between 60 and 75 per cent, although in the better managed companies operating expenses are now kept below 70 per cent. The following table ¹⁹ shows the number of dollars of operating expenses per \$100 of gross revenues (operating expenses including also maintenance and depreciation):

<i>Company</i>	<i>Operating Expenses per \$100 Gross Revenue*</i>	
	1925	
American Gas & Electric.....	63.64	
American Light & Traction.....	72.00	
American Power & Light.....	60.00	
American Water Works & Electric.....	60.80	
Associated Gas & Electric.....	60.60	
Commonwealth Power	63.50	
Electric Power & Light.....	63.83	
Federal Light & Traction.....	67.60	
General Gas & Electric.....	66.00	
Lehigh Power Securities	66.35	
National Electric Power	62.05	
National Power & Light.....	68.94	
National Public Service	64.60	
North American	66.40	
Philadelphia Co.	69.50	
Public Service of New Jersey.....	72.10	
Standard Gas & Electric.....	59.60	
United Light & Power.....	61.80	
Utilities Power & Light.....	53.20	

* In some instances, depreciation had to be estimated. When this was done it was assumed to be 5 per cent of gross.

The operating ratios have the same significance here as in other companies and will not be further analyzed at this time.

¹⁹ Adapted from a study prepared by John Nickerson & Co., of New York, and appearing in the Utilities Section, *Boston Evening Transcript*, June 3, 1926.

Depreciation and maintenance.—The amount of depreciation and maintenance allowed by a company is of vital importance to the investor. It is also true that the real test as to whether adequate reserves have been set aside for depreciation lies in a physical examination of the property itself. In as much as this is rarely practicable, it is generally necessary to rely on such available records of these expenditures as are found in the income accounts and balance sheets of the corporation. Successful holding companies, on the average, allow between 7 and 12 per cent of gross earnings for maintenance and from 5 to 7 per cent of gross for depreciation. An average figure for combined depreciation and maintenance will run between 12 and 15 per cent of gross earnings. This is usually equivalent to between $2\frac{1}{2}$ and $3\frac{1}{2}$ per cent on the book value of the company's property account.

Number of times charges earned.—In considering next the number of times interest charges are earned, we must reconsider for a moment the nature of the holding company. Let us refer briefly to the complete consolidated income account shown on page 410. It will be observed here that the holding company shows \$70,900 available for bond interest amounting to \$18,000. It would appear from these figures that holding company charges had been earned nearly 4 times. This is apparently correct, but not logically so. As a matter of fact, on the basis of the combined statement, there are available \$120,000 to meet total charges of \$67,100, of which the \$18,000 interest on the bonds of the holding company comes last.²⁰ On this basis, it would appear that consolidated charges have been earned slightly less than 1.8 times. The same situation applies to the preferred stock. According to the income account, preferred dividends appear to have been earned nearly 3 times. In reality, these dividends constitute the last, in order, of the \$85,100 of total claims against the \$120,000 "net." Total combined charges, including preferred dividends, are thus earned but 1.41 times. Attention is called to this fact, because the typical bond circular advertising the bonds or preferred stocks of a holding com-

²⁰ Note that there has been deducted from "net," \$18,000 interest on subsidiary bonds, \$21,000 dividends on subsidiary preferred stocks, \$8,100 as applicable to common stock held by minority interests, and \$2,000 expenses of the holding company before the \$18,000 of interest on holding company bonds is considered.

pany almost invariably states the number of times interest or preferred dividends have been earned in the manner most favorable to the issue. Such circulars often neglect to show that the holding company itself may be superimposed on a group of operating companies which are already very heavily capitalized, with the result that the bonds, and especially the preferred stocks of the holding company, are backed by a very thin equity.

For the reasons just stated, we will refer to the number of times combined charges, or combined charges and preferred dividend requirements, are earned when discussing so-called normal figures. One is probably safe in stating that, where combined charges are twice earned, including interest charges on the bonds of the holding company, the presumption is in favor of the soundness of such holding company issue. Likewise, where combined prior charges and preferred dividend requirements are earned 1.5 times, the presumption is in favor of such preferred stock of the holding company. Special circumstances may be present in a given case to warrant somewhat different ratios, however, so that we must again caution the reader against too much faith in categorical statements. All analysis requires the tempering effect of judgment.

Assets and funded debt.—It is not especially difficult to determine the asset values behind a particular issue of holding company bonds, when the consolidated balance sheet is properly set up, provided, one considers all the securities, both bonds and stocks of subsidiary companies, as prior obligations:²¹ Let us turn for a simple example to the consolidated balance sheet shown on page 408. Here we note combined assets of \$2,130,000 (after deducting current liabilities), against which there is a total capitalization of \$1,680,000 (exclusive of surplus). Of this total capitalization \$680,000 of book equity precedes the issue of holding company bonds, while \$700,000 follows this issue (exclusive of surplus). Furthermore, it appears that the entire properties are bonded for \$600,000, or about one third of book values. Where total bonded debt does not exceed 50 per cent of the value of all assets, the bonds of a holding company may generally be considered sound, although,

²¹ This is not always true when the holding company itself owns operating properties. Such properties may, in fact, be pledged under a first mortgage as partial security for the holding company's bonds.

again, other factors in the situation may require a modification in this statement.

Earnings per share of common.—Earnings per share of holding company common stock are significant in determining the theoretical market value of such stock. Whereas it is true that asset values are important in determining the value of the securities of public utilities, earning power cannot be entirely ignored. This is especially true in the case of the common stocks of holding companies, for here the anticipated savings of large scale holding company operation are frequently capitalized by the issue of common stock. That is, in the capitalization of holding companies, it frequently happens that bonds and preferred stocks are issued up to the real value of the underlying assets. The common stock in such cases will have an earning power depending to a considerable degree on the extent to which the holding company can produce a larger amount of net earnings than would be produced under individual operation. The saving thus effected increases "net" available for common stock, and in this way the real value of the common stocks of a utility holding company may in fact be governed largely by earnings per share. The market value and earnings of utility holding companies fluctuate over a rather wide range, it is true, and the relation of earnings to market prices tends to vary from time to time, depending on market conditions. Among investors, however, the present opinion is that the common stock of a representative company should sell at from 12 to 16 times earnings after depreciation, or as high as twelve times earnings before depreciation. Conversely stated, the company should earn from 6.3 to 8.3 per cent on the market price of its stock after depreciation, or approximately 8.3 per cent before depreciation. To be sure, this is only a rule-of-thumb basis for appraisal, but it is frequently used. On the other hand, during periods of high average prices, the stocks of the more active companies will probably sell on a somewhat higher basis. The per cent earned in 1925 on the total market value of the common stocks of 19 holding companies (based on April 1, 1926, prices) was as follows:²²

²² From data assembled in the analysis made by John Nickerson & Co. of Public Utility Holding Companies.

<i>Company</i>	<i>Per Cent Earned on Total Market Value of Common Stocks</i>
American Gas & Electric.....	5.95%
American Light & Traction.....	9.30
American Power & Light.....	7.55
American Water Works & Electric....	7.60
Associated Gas & Electric.....	5.75
Commonwealth Power	7.25
Electric Power & Light.....	4.80
Federal Light & Traction.....	6.40
General Gas & Electric.....	7.67
Lehigh Power Securities	3.42
National Electric Power	10.30
National Power & Light.....	5.80
National Public Service	16.30
North American	7.35
Philadelphia Company	10.70
Public Service of New Jersey.....	7.25
Standard Gas & Electric.....	7.50
United Light & Power.....	9.15*
Utilities Power & Light.....	12.00

* On new stock based on author's computations.

The following chart will serve to bring these data down to a more recent date (October, 1926) and will also illustrate vividly the manner in which this relationship varies from time to time with market conditions:

EARNINGS AND PRICE OF STOCKS OF CERTAIN PUBLIC UTILITY STOCKS, SELECTED DATES, 1926

(*Wall Street Journal*, October 15, 1926)

Company	1925	Feb. 1, 1926, Prices	Multiple Earnings Oct. 1,			
	Earnings per Share		Price of Earnings	12 Mos., June 30, 1926	1926, Price per Share	Multiple Price of Earnings
Amer. Gas & Electric...	\$4.55	\$94	20.6	\$6.57	\$101	15.4
Amer. Lt. & Trac.....	18.59	252½	13.5	19.61	206	10.5
Amer. Pr. & Lt.....	4.28	75¾	17.6	4.70	63	13.4
Amer. Water Works *	3.90	69¾	17.7	4.60	53	11.5
Columbia Gas & Electric	5.38	84¾	15.7	6.59	80¼	12.2
Commonwealth Power ..	2.61	40¾	15.3	3.84†	38½	10
Elec. Bond & Share....	5.99	80	13.3	6.47	66½	10.3
Electric Pr. & Light...	1.01	31⅞	30.7	1.01‡	16¼	16.1
Federal Lt. & Traction..	1.92	37¾	19.6	2.20	31½	14.3
General Gas & Elec.*..	2.26	52	23	2.53	40¾	16.1
National Pr. & Lt.....	1.42	33¾	23.4	1.51	19½	13
North American*	3.73	64¾	17.3	3.84	49¼	12.8
Public Service	6.45	87½	13.5	7.65	93	12.2
Standard Gas & Elec....	4.23	58¾	13.8	6.69	53¾	8.1
United Lt. Power	1.05	27½	26.1	1.08	11¾	10.9

* Figured on average number shares outstanding.

† Twelve months ended August 31.

‡ Estimated.

Relation of capital structure to charges and net per share of common.—It must be observed that the capital structure of a holding company has much to do with the sensitiveness of net earnings per share of common to changes in operating revenues, operating expenses, and subsidiary deductions. The heavier the bonded debt of a corporation the larger its fixed charges, naturally. Where a corporation is thus financed largely by funded debt or funded debt and preferred stock, leaving only a small residue of capitalization represented by common stock, a slight drop in gross, or a small increase in operating expenses, tends greatly to reduce per share earnings. Conversely, in the case of such companies, a slight increase in operating revenues or a slight decrease in operating expenses tends greatly to increase per share earnings on the common stock.²³ For this reason, the common stocks of companies with a proportionately heavy funded debt offer opportunities for larger profits; but, on the other hand, must be considered more speculative.

Use of gross earnings in appraising holding company securities.—The relation of gross earnings to capitalization affords other interesting comparisons. It is generally felt that a public utility holding company may conservatively be capitalized at 5 times gross earnings. This, again, is a statement that can be used only in a general way, subject to modifications in special cases. As a matter of fact, however, it so happens that the capitalization of typical companies will, on the average, closely approximate this figure. This leads us to another rule-of-thumb method for valuing the common stocks

²³ This may be illustrated by the following simple example which also shows why it is frequently to the advantage of public utility companies to trade on a rather thin equity. Assume that total property values of Corporation A are \$10,000,000, and that the company has outstanding \$5,000,000 in 6 per cent bonds, and \$5,000,000 in common stock (par \$100). The company earns 8 per cent on its property valuation or \$800,000, \$300,000 is required to pay interest on its bonds, the balance going to the common. In other words, per share earnings on the common amount to \$10. Assume now that Corporation B has \$10,000,000 in assets and is capitalized as follows: \$5,000,000 6 per cent bonds, \$3,000,000 7 per cent preferred stock, and \$2,000,000 common (par 100). This company likewise earns 8 per cent on its assets, or \$800,000. After distributing \$300,000 to the bond holders and \$200,000 to the preferred stockholders, we have \$290,000 left for the common which is equivalent to \$14.50 per share. We may now assume that both companies, through reduction in operating expenses, increase their net earnings from \$800,000 to \$850,000. This would increase per share earnings of Corporation A from \$10 to \$11 per share. In the case of Corporation B, however, per share earnings would be increased from \$14.50 to \$17 per share.

of holding companies. If we multiply gross earnings by five and deduct therefrom all outstanding bonds and preferred stocks, and the minority interests in holding companies, at par, the balance is the theoretical amount which remains for all the common. This remainder, divided by the number of shares, will give the theoretical value per share. The method here discussed may be illustrated by the following application made to the accounts of the Public Service Corporation of New Jersey for the year 1925: ²⁴

Total Operating Revenues of Subsidiaries.....	\$ 94,715,525
	× 5
Deduct	\$473,577,625
Combined Funded Debt	\$234,170,116
Combined Preferred Stocks and Minority Holdings	126,939,662
Total Securities Preceding Common	361,109,778
	\$112,467,847
Available for Common per Share Based on 1,037,867 Shares Common	
Outstanding	\$108.40
Market May, 1926, about.....	80.00

The total capitalization of the 19 companies mentioned on page 412, figuring common stocks at April 1, 1926, market prices, gives the following capitalization per \$100 gross (if our formula worked precisely we would expect total capitalization to equal \$500 per \$100 gross): *Complete Capitalization*

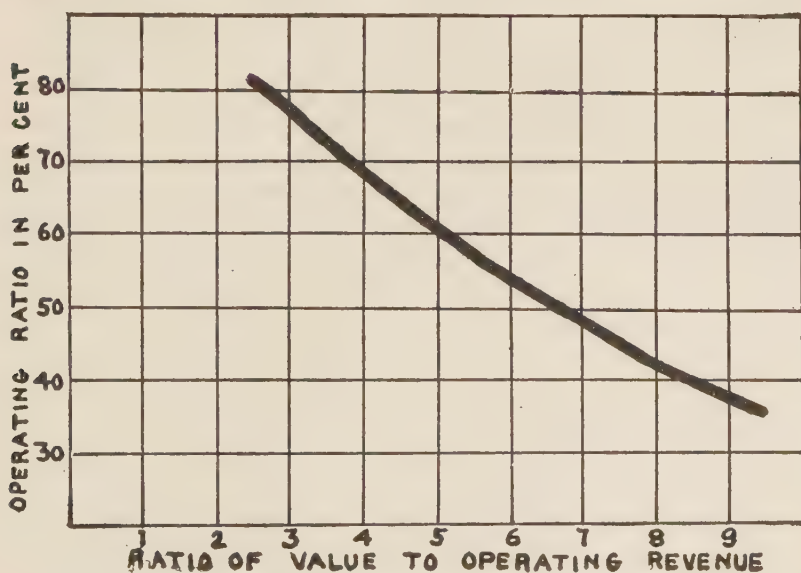
<i>Company</i>	<i>per \$100 Gross *</i>
American Gas & Electric.....	\$700.85
American Light & Traction.....	410.30
American Power & Light.....	626.35
American Water Works & Electric...	643.25
Associated Gas & Electric.....	695.00
Commonwealth Power	598.50
Electric Power & Light.....	607.21
Federal Light & Traction.....	539.80
General Light & Electric.....	554.00
Lehigh Power Securities.....	621.25
National Electric Power.....	593.70
National Power & Light.....	534.60
National Public Service.....	523.70
North American	583.60
Philadelphia Company	353.78
Public Service of New Jersey.....	455.70
Standard Gas & Electric.....	654.20
United Light & Power.....	634.00
Utilities Power & Light.....	566.50

* Figures from John Nickerson & Co., Public Utility Holding Companies.

²⁴ Annual Report, 1925. See *Commercial and Financial Chronicle*, Vol. 122, p. 163.

A refinement of this rule is possible if proper consideration is given to the operating ratio of the company. It is obvious that gross revenues should be of greater market value (in terms of our formula), as operating expenses decrease, for a decrease in the operating ratio thus leaves a larger proportion of gross *available* for charges and dividend requirements. If the preceding formula is to hold, and if a normal company is to earn 8 per cent on its investment, it is apparent that the operating ratio of the company must approximate 60 per cent. Let us assume that Company A has a total investment of \$10,000,000, or 5 times its gross revenues of \$2,000,000. In order, now, to allow \$800,000 net, operating expenses should not exceed \$1,200,000, or 60 per cent of gross. To state the matter in another way, in order to allow an 8 per cent return on total investment, such investment must be more or less than 5 *times gross*, depending on the extent to which the operating ratio of the company falls below or exceeds 60 per cent. The following chart shows the number by which gross revenues should be multiplied in ascertaining the theoretical value of total investment, depending on the operating ratio of the corporation under consideration.

Fig. 19.—Gross Earnings, Investment Values, and Operating Ratios.



Management.—In addition to methods which are largely statistical in scope, it is necessary for the investor to acquaint himself with the management of the company—its ability, honesty, and past success. The mere fact that a group of properties is under the management of Stone & Webster, Electric Bond & Share, or the Insull interests is frequently a sufficient guaranty of their success to satisfy some investors. The territory served by the company and the opportunities for profitable extension and development are likewise important. It is further necessary to ascertain the amount of gross revenues derived from electric light and power service, gas, and traction. It is also desirable, in view of the present condition in the traction field, that the company should not derive more than 15 or possibly 20 per cent of its entire gross revenues from traction business, otherwise it loses some of its character as an electric light and power company.

Summary.—In summarizing the present chapter, it is evident that the methods of analysis applicable to electric light and power operating companies differ from those employed in studying holding companies. In the former, there is a distinct unit, in the latter a heterogeneous group of companies, to which the use of common measures of operation other than those derived largely from financial statements are inapplicable. The rapid expansion of the electric light and power industry during the first quarter of the present century has been accompanied by a remarkable extension of the holding company idea, with resulting economies on the whole, but with some financial manipulation notwithstanding. It is necessary, in the case of electric light and power companies in no less degree than in the case of other industries, to study all the pertinent data before making commitments, despite the existence of a more enlightened public control of the former.

CHAPTER XVII

INVESTMENT CONSIDERATION OF SPECIAL CLASSES OF UTILITIES (CONCLUDED)

The Gas Industry

Historical development.—The service of gas supply is, next to the service of water supply, the oldest of the public utilities here under consideration. The manufacture of gas for purposes of illumination dates from the latter part of the eighteenth century when experimentation was carried on simultaneously in England and France. Apparently this was laboratory experimentation only until 1805, or thereabouts, at which time, there is reason to believe, gas was used for lighting in Manchester, England.

The first recorded experimentation in the United States was in 1806 in Newport, Rhode Island, when coal gas was manufactured for private use on the premises of Daniel Melville. The first crude processes were improved from time to time and, in 1813, Melville secured a patent and introduced gas for illumination in a cotton mill in Watertown, Massachusetts.

The prospects for commercial development of gas manufacture led to decided improvements in technological processes and the first gas company, the Chartered Gas Light & Coke Co., was chartered in London in 1810.¹ The first gas company in the United States, the Gas Light Company of Baltimore, was chartered in 1816 and was authorized to "manufacture, procure or collect 'gas or inflammable air,' and to preserve, use, and distribute it as a means of giving light or any other useful purpose, or for lighting the streets and public places and houses and other buildings. . . ." ²

The Boston Gas Light Company was organized in 1822 and this was soon followed by the organization of companies in

¹ Barker, "Public Utility Rates."

² Wilcox, "Municipal Franchises," Vol. I, p. 623.

New York City in 1823; in Brooklyn and Bristol, R. I., in 1825; in New Orleans in 1835;³ in Pittsburgh and Philadelphia in 1836; in Louisville in 1838; in Cincinnati in 1841; and in Albany in 1845.⁴

These early companies gradually overcame a variety of obstacles. Large capital investments were required for the construction of the manufacturing plants and the distribution systems. Early opposition to the projects because of fear that the manufacture and use of gas endangered the public safety soon gave way to sympathetic support of the projects. Notwithstanding the relatively high cost of gas for illumination, the industry continued to develop. In 1849 there were thirty establishments engaged in the manufacture of illuminating gas for sale, with a capital investment approximating \$7,000,000, a product approximating in value \$2,000,000, with an employed personnel of approximately 900 persons earning in excess of \$390,000. In 1869 the industry had grown to include 390 establishments, employing a capital investment of \$72,000,000, producing a product valued in excess of \$32,000,000, and employing a personnel of approximately 8,700 earning \$6,500,000.⁵

Competition with oil and electricity.—Until 1870 gas for illumination competed with candles and whale oil only, and its superiority was unquestioned. The introduction of kerosene oil, however, offered more serious competition. While it possessed higher illuminating value than its forerunners, it could be utilized with considerable more economy than gas. Doubtless this retarded somewhat the development of the gas industry, but the situation was met very soon by the results of certain experimentations in production processes. Until this time coal gas only had been produced, but the investigations of Du Motay and Lowe⁶ led to the introduction of so-called water gas. The manufacture of water gas at lower production costs had hardly overcome the opposition of coal-gas producers when the appearance of electricity as an illuminant brought the first important challenge to gas.

The perfection of the electric arc in 1878 was followed in

³ Twelfth Census, Vol. X; "Manufactures," Part IV, p. 713.

⁴ Barker, "Public Utility Rates," p. 278.

⁵ Eleventh Census, "Manufactures."

⁶ Twelfth Census, Vol. X, "Manufactures," Part IV, p. 714.

1881 by the appearance of the incandescent electric lamp. The economical use of gas for heating purposes had not as yet been demonstrated, but the superiority of the electric lamp from the standpoint of safety and illuminating value soon encouraged the search for new uses. The cost of gas was gradually reduced and its use was extended to domestic and industrial heating. Notwithstanding the growth and development of central station electric lighting, the gas industry continued to expand. More and larger uses for gas were found. The appearance of electricity served not so much to retard its development as to force it into the field of public service where its natural superiority was to be demonstrated. In 1889, 714 of the 1,244 cities in the United States, with a population in excess of 2,500, were supplied with gas.

In 1899 the gas industry had grown to include 877 establishments with a capital investment of \$567,000,000, a product valued at \$76,000,000, an employed personnel of 28,000 persons earning approximately \$18,000,000.⁷ Of the 1,653 cities in the United States, with a population in excess of 2,500, 827 were supplied with gas. Of these cities, 798 were served by one plant each; 22 cities by 2 plants each; 4 cities by 3 plants each; and Chicago claimed 4, Boston 6, and New York 13.

In the year 1919, for which the most complete statistical information is available, there were 1,022 establishments engaged in the manufacture of gas with a capital investment of \$1,466,000,000. The total value of the product amounted to \$329,000,000, an average of \$322,000 per establishment. In this year the industry employed 63,000 persons earning \$77,000,000, maintained a gas holder storage capacity of 835,041,000 cu. ft. and operated 69,742 miles of mains, with which were connected 5,469,000 stoves and heaters. It served 8,200,000 consumers, and the ratio of consumers to population in the territory served was 1 to 5.2. Because of the changes in the value of the dollar, statistics of physical results offer more satisfactory bases for measuring the growth of the industry. The quantity of gas produced increased from 67,000,000,000 cu. ft. in 1899 to 344,000,000,000 cu. ft. in 1919.

⁷ Twelfth Census, Vol. X, "Manufactures," Part IV.

Technical aspects of gas production.—The service of gas supply requires the maintenance and operation of a central manufacturing plant, a central storage facility, and an extensive distribution system. The manufacturing plant consists of an elaborately constructed "works," where the physical and chemical processes of gas generation are carried on more or less continuously. The storage facility consists of a sizable gas holder to which gas is conveyed as manufactured and upon which the distribution system draws for the satisfaction of consumer requirements. The distribution system includes low pressure mains, in some cases high pressure transmission mains for distant conveyance, reducing stations, and service lines. The nature of the production process, the nature of the demand for service, the size and layout of the city, all enter into the determination of the division of the capital investment between the "works" and the storage and distribution facilities. The investment in the storage and distribution facilities is usually double the investment in manufacturing plant and equipment.

The gas industry to-day is organized technologically for the production of several kinds of gas, the most important of which are carbureted water gas, straight coal gas, mixed coal and water gas, and oil gas. The manufacture of coal gas consists of the destructive distillation of bituminous coal. Coal is heated for several hours in fire-clay retorts, heated from without by coal, gas, or oil furnaces. Gas, consisting chiefly of hydrogen, methane, and, to some extent, carbon monoxide, is drawn off, and a carbon residue, coke, is left. This gas is passed through several purifying, condensing, and by-product extracting processes, after which it is measured and conveyed to the gas holder. The chief by-products are coke, tar and tar oils, and ammonia. High temperature carbonization yields larger quantities of gas and the gas has larger hydrogen content and more by-product ammonia. Low temperature carbonization yields gas with higher calorific value and more by-product coke and tar. On the average, under low temperature carbonization, gas contains 45 per cent of hydrogen. The problem of coal gas engineering consists in procuring the highest possible advantage from high temperature carbonization in quantity and quality of gas and in by-product extraction. A

ton of coal under low temperature carbonization can be expected to yield 400 cu. ft. of gas. Under high temperature carbonization it can be expected to yield from 8,000 to 12,000 cu. ft. of gas, about 1,300 lbs. of coke, 12 gallons of tar, and 30 gallons of diluted ammonia.

Coal gas manufacture is frequently supplemented within the establishment by water gas manufacture. Carbureted water gas is often used to enrich coal gas from the standpoint of calorific value or candle power. Water gas installations are frequently used to meet the requirements of peak loads and emergency demands upon the production system. The water gas generating facilities can be set in operation within a relatively shorter time than in the case of coal gas generating facilities.

The manufacture of water gas involves the passing of steam over a bed of incandescent carbon in the form of coke, the chemical reaction resulting in the generation and combination of carbon monoxide and hydrogen. This is known as "blue water gas." Blue gas possesses lower calorific and luminous value than is generally required for consumption purposes. This deficiency is overcome by enriching or carbureting the blue gas through the generation of oil gas in combination. Oil is sprayed into a hot carbureter, where it is converted into oil gas composed of hydrogen, methane, and other hydrocarbons. The carbureted water gas then passes through purifying and condensing processes into a relief holder. In some instances, it is mixed with unpurified coal gas before purification. Water gas generation is usually an intermittent process, due to the necessity for reheating the bed of coke after the "run," lasting about four minutes, followed by the "blow," a blast of air lasting about one minute. The gas is collected during the "run" in the relief holder and the delivery to the storage holder is thereby equalized.

Where the relative cost of coal and oil permit, gas is often manufactured from oil. Oil and steam are blown into the generating apparatus and an air blast is also admitted. After a heating period of a few moments gas is drawn off and passes on through purifiers to the holders. Oil gas resembles coal gas more than water gas. Its advantage lies in its luminous quality rather than in its calorific value. The cost of oil, how-

ever, continues to present an economic obstacle to the development of oil gas generation.⁸

Gas industry compared with electric power and light.—In many ways the gas industry is less flexible than the electric power and light industry. By this is meant that a gas company, once established and equipped with a plant and mains, represents a relatively fixed investment. This situation may be explained largely by reference to the type of distribution system required. Mains must be underground, whereas electric wires may be overhead, and thus are more easily moved or extended for considerable distances. A gas company, therefore, can extend its area of service only with difficulty after certain limits of expansion have been reached, and it can make adjustments to the needs of its customers only within narrow limits. Furthermore, it is uneconomical for a gas company to operate in cities below a certain size. In small communities overhead cost of establishing the plant and laying the mains is often not justified by the amount of business the company can do. On the other hand, those companies serving thickly populated areas enjoy the advantages of large scale production, effective utilization of distribution facilities, and, therefore, low distributing costs.⁹

On account of this inflexibility it is especially necessary for the prospective investor to study the size and future prospects of the company in which he anticipates investing. Companies located in areas whose population is declining, or in small and slowly developing communities, are not, as a rule, attractive. The cost of distribution is often high for such companies and their opportunities to develop or to increase profits are limited. Furthermore, it is often impossible for such companies properly to diversify the types of customers to which they sell, with the

⁸ The preceding historical and technological sketch of the gas industry was furnished by Professor James P. Adams of Brown University.

⁹ As already noted, in 1919, the census reported 1,022 establishments in the United States. This alone is sufficient evidence that the gas industry has not been so extensively developed as the electric light and power industry. In 1917, there were 6,542 central electric stations; in 1922, 6,355. Furthermore, the distribution of electricity is possible over much wider areas than is gas. In 1923, the census reports 939 establishments manufacturing gas in the United States. After 1921, however, the census omitted enterprises doing an annual business under \$5,000; whereas, in 1919, only enterprises doing an annual business under \$500 were omitted.

result that the prosperity of the company is too often tied up with the fortunes of a few local industries.

The operation of a gas plant does not involve quite the same problems in connection with the character of the demand for service as were found to exist in the electric light and power industry. The problem of adjusting the capacity of a gas works to maximum demand is related essentially to its distribution facilities and not to its plant. The capacity of a gas plant is adjusted to meet the maximum daily demand on the basis of continuous operation, and not the maximum instantaneous load, as in the case of an electric light and power plant. When the production of a gas plant exceeds send-out, the excess is stored in the storage holder. When send-out exceeds production, the distribution system draws upon the holder. The *distribution* facilities, however, must be adjusted to meet the maximum instantaneous demand (usually measured as maximum hourly demand). It is, nevertheless, true that gas companies can operate to better advantage where there is a high diversity factor among customers and where the maximum hourly demand approaches the average hourly demand over a 24-hour period. In small communities there is less opportunity for ideal demand conditions than in large cities.

Effect of competition with electricity.—As previously suggested, the gas industry has gone through a rather severe test period in this country during the past twenty-five years. At the opening of the present century gas was used largely for illuminating purposes. The superiority of electricity, however, in respect to comfort, safety, and convenience, as well as in the matter of economy, caused a rapid transformation. As a result, the gas industry has lost a considerable market for its product during the past quarter century. In fact, there have been times when it was felt that the industry might experience a permanent decline.

The development of new home uses for gas and the rapid increase in industrial consumption, however, have more than offset the market lost in the field of illumination. During the first quarter of the present century, there has been a rapid and consistent growth in the volume of gas sold in this country, whether measured in terms of dollars or in millions of cubic feet of output. The total increase in annual production from

1899 to 1923 was, in fact, nearly 500 per cent.¹⁰ Whereas there has been an increase in both home and industrial uses, the latter has shown the more rapid development. In 1920 industrial uses accounted for 21.7 per cent of total output, while, in 1925, 27 per cent of all gas sold was used by industrial and commercial customers.¹¹

Analysis of gas companies: extent of utilization.—In the gas industry the "mile of main" is often used as a basis for studying the economic position of the industry in the community. Population per mile of main and customers per mile of main, on the other hand, provide a measure of the effectiveness with which the company serves its territory. If the population per mile of main is high, while customers per mile of main in a given case are relatively low, there is presumptive evidence that the selling efforts of the company have not been properly exerted, that prices are too high, or that the character of population is not conducive to satisfactory development. On the other hand, high figures for both population and customers per mile of main suggest better development, but may indicate that the limit of rapid expansion has been reached. Low population per mile of main usually means a sparse or poorly distributed population, a situation which often requires a relatively high investment in distribution facilities. The average plant will show between 500 and 800 consumers per

¹⁰ Based on data from U. S. Bureau of Census Reports.

STATISTICS SHOWING GROWTH OF GAS INDUSTRY

Year	Number of Establish- ments	Value of Product (000,000 omitted)	Quantity of Gas Produced M. Cu. Ft. (000,000 omitted)
1899	877	\$ 76	67
1904	1019	125	113
1909	1296	167	151
1914	1284	220	204
1919	1022	329	344
1921	954*	411	334
1923	939*	450	387

* Until 1921 enterprises doing an annual business under \$500 were omitted. In 1921 the limit was raised to \$5,000. In 1919 there were 74 reporting companies with an annual product between \$500 and \$5,000.

¹¹ Weeks, Howard F., "Scanning the Future of the Gas Industry," *Boston Transcript*, June 3, 1926.

mile of main, although in very thickly populated areas the figures will run substantially higher.¹²

The number of meters per mile of main is the figure frequently used to measure the density of business. This ratio has particular significance in the gas industry, because of the relatively high investment required here in distribution facilities. Meters per mile of main commonly run between 100 and 150, although in larger cities the figures often run much higher. Thus New York has over 600 meters per mile of main. Ratios of this nature, however, should not be relied upon as conclusive evidence of the relative merits of a given company, for at best they merely indicate possible situations that should be verified by a further study.

Sales per unit of main.—Other interesting comparisons center on sales per unit of main, in terms of cubic feet and in terms of dollars. Such measurements serve to indicate the effectiveness with which one company utilizes its investment as compared with other companies operating under substantially similar conditions. The ratio of cubic feet per mile of main is probably the more accurate of the two methods of comparison, for the question of different rates as between different companies is thus eliminated. Annual gas sales per mile of main, in terms of cubic feet, are subject to considerable variation as between communities on account of differences in customer density, but will normally range between 2,500,000 and 4,500,000 cubic feet. In very large cities, sales may run as high as 8,000,000 or 9,000,000 cubic feet per mile. In terms of revenues per mile of main, one finds a normal range between \$3,000 and \$7,500.

Financial analysis of gas companies: capitalization, gross earnings, and operating ratios.—The total capitalization of gas companies may be compared to gross earnings in much the same way as for electric light and power companies. In view of the fact that the standard operating ratio of gas companies is somewhat higher than in the case of electric light and power companies, however, one normally looks for a somewhat lower capitalization in relation to gross sales. Whereas no compre-

¹² This ratio is often expressed as the miles of main per 1,000 of population served. When so expressed the normal range will be found between 1.25 and 2 miles.

hensive data are available in reference to averages for the industry, the following study covers the situation for selected New England companies during the period 1921 to 1926, inclusive:¹³

TOTAL CAPITALIZATION PER \$ GROSS						
	1921	1922	1923	1924	1925	1926
Bridgeport.....	\$3.00	\$3.26	\$3.08	\$3.33	\$3.40*	\$3.16*
New Haven.....	2.05	2.09	2.08	2.30	2.14*	2.13*
Hartford City.....	2.52	2.61	2.35	2.68	2.60	2.48
Meriden.....	2.26	2.22	2.60	2.78	....	....
Providence.....	3.06	3.76	3.80	3.82	4.21*	4.12*

OPERATING RATIOS						
	1921	1922	1923	1924	1925	1926
Bridgeport.....	81%	74%	73%	72%	74%	73%
New Haven.....	82	79	82	78	81	80
Hartford City.....	77	82	78	77	71	71
Meriden.....	92	93	88	89	...	...
Providence.....	78	66	68	69	65	67

* Includes gross plus other income.

For companies situated as these companies are in cities of moderate size it would appear that a normal operating ratio lies between 70 and 80 per cent. A normal total capitalization, on the other hand, appears to be between 2 ½ and 4 times gross earnings. It is impossible, of course, to make generalizations applying to the whole industry. These suggestions, therefore, should serve largely to direct attention to the basis of comparison rather than to serve as a standard for any particular company. What the ratio should be in a specific case will be determined after a study of other pertinent data.

Analysis of capital structure.—As to what constitutes a proper capital structure, and as to what constitutes proper safety factors for the bonds of gas companies, it may be said that essentially the same tests are applicable as were suggested in the case of electric light and power companies. Interest charges should be earned at least twice over a period of years and the bonds should be followed by an equity equal, at least, to the par value of the bonds outstanding. We would not

¹³ Made by the author in 1925 and extended in 1927.

expect, therefore, to find bonds constituting much more than one-half the total capitalization of the company.

Summary.—In summary it may be said that the gas industry has survived the severe crisis presented by the rapid development of the electrical industry and now appears to be in a satisfactory condition. Consequently, the securities of properly managed gas companies may be considered as conservative investments. It is estimated that at present there are but 1,015 meters in receivership out of a total of more than 10,000,000 actually in service. While perhaps not so widely recognized as the electric light and power industry, the manufacture and sale of gas nevertheless plays a vitally important part in our industrial and commercial life and will no doubt continue to play an increasingly important part for some time to come.

Street Railways

Unfortunate position of electric railways.—The electric railway industry is perhaps the most unfortunate of all the so-called public utilities. In outward appearances, at least, the industry started under auspicious circumstances and showed a fairly healthy growth until economic conditions began to change during the Great War. Thus, in 1890, we find 789 companies operating 8,123 miles of track. By 1902 the number of companies had increased to 987, but trackage had increased by more than 150 per cent, amounting in that year to 22,577 miles. By 1912 miles of line operated had increased to 40,065, and in 1917, to 44,835. Since that time there has been an actual decrease in miles of track operated, the figure being 43,932 for 1922, the last year for which census figures are available.¹⁴

Recent receiverships.—The entire story of the failure of electric railway companies to live up to the performances of other public utilities is not told, however, in terms of miles operated. An even more unattractive picture is found in the record of receiverships of electric railway companies. Evidence of this nature is given in the following table:

¹⁴ "U. S. Statistical Abstract," 1926, p. 402. Much of the mileage operated in 1890 was adapted to horse cars.

ELECTRIC RAILWAYS PLACED UNDER RECEIVERSHIP *

(Six-year Averages, 1909-1926)

<i>Years</i>	<i>Average Number of Companies</i>	<i>Average Number of Miles of Track</i>	<i>Outstanding Stocks</i>	<i>Securities Bonds</i>
			<i>(Averages in \$1,000)</i>	
1909-1914	18	476	\$26,518	\$ 36,708
1915-1920	27	1,592	88,474	105,409
1921-1926	15	921	26,171	46,527

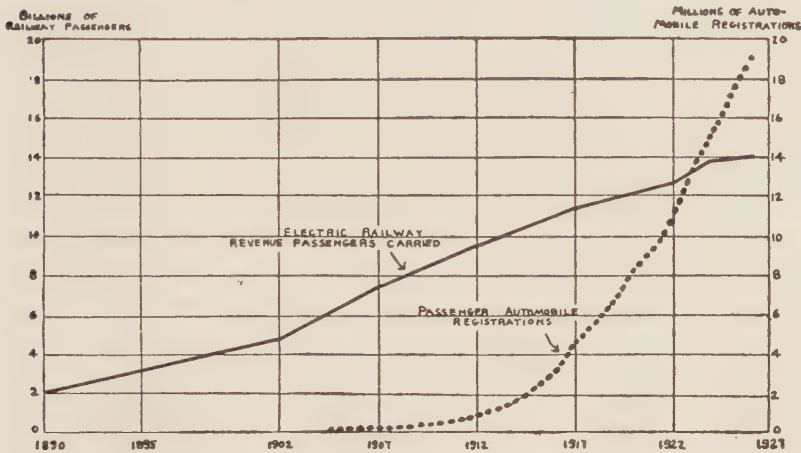
* "U. S. Statistical Abstract," 1926, p. 408.

Present situation, cause of.—While it is true that the electric railways of this country have suffered severely from the competition of other forms of transportation, notably the bus and the private automobile, as well as from rising costs of operation, it is also true that the early development of many electric railway companies was not entirely sound. These companies were frequently overcapitalized. Nor is this strange, when one considers the novelty that electric traction held for the public from, say, 1890 to 1905, and the optimism with which this form of transportation was first received. Promoters, quite naturally, capitalized the concerns in which they were interested on the basis of the earning power which they expected would later develop; and, when mergers or consolidations of independent lines into systems took place, the operation of increasing capitalization was repeated. In this way it is probably true that the industry was in a vulnerable position when it was required to face the test of adverse conditions, induced partly by the War and partly by the wide increase in the use of private automobiles and buses.

Effect of automobiles on earnings of trolley companies.—A pertinent question at present is whether traction companies will ever be able to regain their former status. In seeking an answer to this question it must be admitted that, in so far as recent conditions are temporary, recovery for the securities of this type of company may be expected. It is necessary, therefore, to review briefly the essential causes for the decline in earnings of traction companies and the possibilities of improvement. The most obvious development of an adverse nature has been the increased use of gasoline-propelled vehicles. The number of automobiles registered in the United States has

shown a remarkable increase during the past decade as indicated by the following chart:

Fig. 20.—Trends of Electric Railway Passenger Traffic and Passenger Automobile Registration—United States. Electric Railway Passengers, 1890–1922.



U. S. Census, 1924, 1925, and 1926, *Survey of Current Business*. (Estimated from reports of railways carrying approximately 68% of total passengers.) Automobile Registrations—"Facts and Figures of the Automobile Industry" (1927 ed.), p. 4.

It is interesting to note in this connection that, while automobile registration has been increasing at a very rapid rate, there has likewise been an increase in the number of passengers carried annually by street railways during the period. The figures shown here are somewhat misleading, however, because some roads have been affected much more than others. In any event, the increased use of automobiles has served to check the growth in number of passengers carried, especially on interurban lines, as is indicated by the slow rate of increase after 1917. Had the number of automobiles registered shown only a moderate increase after 1917, it is not unlikely that a larger increase in passengers carried might have taken place, thus offsetting in some degree at least the unfavorable effect of rising costs of operation.

Bus and jitney competition: present situation.—Bus and jitney competition must also be taken into consideration. In some communities the privately operated bus has entirely displaced the electric railway. This, however, has taken place usually in small communities, where traffic proved insufficient to enable the operation of an electric railway system on a

profitable basis. In other communities local bus and jitney operation has been restricted for the most part to runs not served at all by the trolley. In other words, the traction company, where it has survived, is now often protected against unrestricted bus or jitney competition. Furthermore, the traction companies themselves are at present operating buses on an increasing scale. In this way they have been able to extend service into areas where trolley service would be unprofitable, and they have also used bus lines as feeders to their regular trolley service. In 1920 there were but 73 buses operated in the United States by electric railways, whereas, in 1925, there were 4,452 buses so operated.¹⁵ It would appear, therefore, that, except on interstate traffic where the bus problem has not been solved, competition from this source is no longer serious to the traction industry.

In considering the future effect of the automobile on the passenger traffic of electric railways, the extreme congestion already resulting in our larger cities from the use of automobiles must be taken into account. The lack of proper parking accommodations and the necessity for more and more severe traffic and parking ordinances have already made themselves felt in our larger cities, with the result that more people are using the trolley car for business and shopping purposes than formerly. It is quite probable that the next decade will witness a satisfactory increase in the use of electric transportation in the larger communities, that is, cities with a population in excess of 100,000.

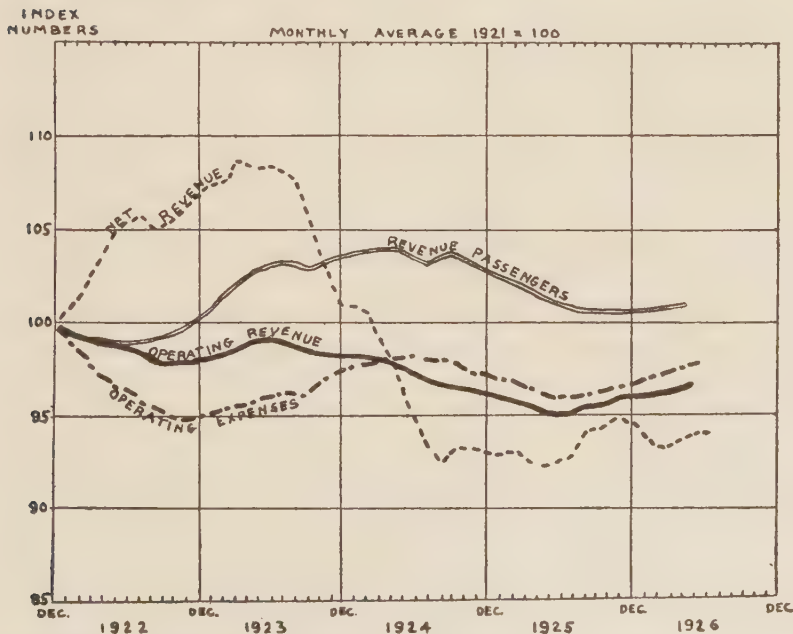
Rising costs of operation, rates, and profits.—The financial difficulties of our electric railways after 1917 were probably brought about by the rapid increase in commodity prices and wages as much as by any other one cause. This increase in operating expenses proved particularly burdensome to the traction companies, since they were often prevented, by reasons partly political and partly economic, from raising the prices of their services correspondingly. The combined operating ratios of 213 electric railways located in the larger cities increased from 58½ per cent in 1912 to 70½ per cent in 1924. This situation is more strikingly shown in the matter of wages. In 1913, for instance, wages absorbed nearly one third of the operating revenue of a typical traction company. Wages in-

¹⁵ "Bulletin No. 48," American Electric Railway Association, Oct. 1, 1925.

creased from a basis of 100 per cent in 1913 to 206 per cent in 1924. During this same period, cash fares increased from 100 per cent to 153 per cent only.¹⁶ This situation, however, is one that is subject to some correction.

Recent tendencies.—In contrast with the electric light and power industry which recovered rapidly after the post War depression, operating results of electric railways continue unfavorable. Average fares declined rather substantially during 1922, 1923, and 1924, although in 1925 and 1926 there was a slight advance in fares. Revenue passengers carried declined during 1924 and 1925, although the present tendency is slightly upward. Net revenues, on the other hand, declined rapidly during 1923 and 1924, and as late as 1926 failed to improve substantially. The following chart,¹⁷ based on the operations of 80 selected roads, shows these tendencies very clearly.

Fig. 21.—Trend of Revenues and Expenses—Electric Railways. The Trend is the Moving Daily Average, or the Annual Total as at the End of Each Month Divided by the Number of Days in the Year.



Bulletin No. 104, Amer. Elec. Ry. Assoc., Oct. 1, 1926, p. 10.

¹⁶ "Bulletin No. 48," American Electric Railway Association, Oct. 1, 1925.

¹⁷ Taken from "Bulletin No. 104," Oct. 1, 1926, p. 10.

At the present writing (1928) there is nothing to indicate an early recovery in the electric railway industry, although there is a disposition to feel that the increased automobile congestion in metropolitan areas will force more people in the future to use the electric railway. If such a tendency evidences itself during the next decade it will undoubtedly help the electric railway industry, especially in the larger cities.

Analysis of territorial factors and population.—A study of the securities of individual electric railways presents certain interesting problems. In the matter of population distribution, it is important that an analysis be made of the extent of population served, normal community growth, and the distribution of population. Topographical features likewise have an important influence on costs. The presence of grades adds to operating costs, whereas communities situated along river banks or shore fronts can expand in only one direction. Where the latter situation exists, the traffic density on certain lines of the local railway system is often kept down, especially where they do not run through the center of the areas they serve but on the outer edge. The existence of growing suburban areas is often more advantageous to the traction company than a heavily populated centralized area. In localized areas the average haul is often so short that an increase in fares tends to discourage riding, whereas, if the average haul is long, transportation is indispensable. On the other hand, the existence of thinly populated areas some distance from the civic center of the community is not desirable, for this necessitates long hauls with inadequate traffic.

Measurements of traffic density.—Traffic density of an electric railway may be computed, either by dividing the number of passengers carried annually by the number of car miles run, or by dividing the number of revenue passengers carried annually by the total investment of the company. The first ratio furnishes information concerning the extent to which actual cars operated have been utilized, the second indicates the number of passengers accommodated or handled per dollar of investment. Fares charged should be taken into consideration when the preceding ratios are compared for different lines. A road with a five-cent fare will have to carry twice as many passengers as a road charging a ten-cent fare in order to derive the same gross earnings.¹⁸

¹⁸ This situation is admirably illustrated by a comparison of the Interborough

Capitalization per mile of track.—Another basis sometimes used for comparing different roads is capitalization per mile of track. Such a study has the advantage of testing the real value of the equities behind a particular issue of bonds or stock. In using this base, however, it is necessary to consider the nature of the territory served. The Interborough Rapid Transit System, for instance, was capitalized in 1926 at \$814,000 per mile of track operated, while funded debt amounted to about \$702,300 per mile. The Boston Elevated, on the other hand, was capitalized at \$204,300 per mile, whereas funded debt amounted to \$100,400. These figures are not excessive, when one considers the elaborate subway and elevated construction necessary, and the extremely heavy traffic handled, especially by the former system. In small localities, ranging from 100,000 to 250,000 population, a total capitalization of \$50,000 per mile of track probably is the customary maximum. In such cases, bonded debt should not exceed \$25,000 to \$30,000 per mile. In the case of small communities, the local situation is controlling in respect to the value of trackage. Where there is adequate traffic to assure profitable operation, trackage may have a value as high as \$20,000 to \$30,000 a mile. In other cases, where traffic is so light that operating costs are not being met, trackage may be worth only its junk value.¹⁹

Operating ratios, capital structure, charges, earnings.—Regarding the matter of operating ratios, the relation of funded debt to total investment, and the relation of charges to earnings, about the same conditions will exist as were previously suggested for other types of public utility companies. Operating ratios to-day for well managed traction companies will probably average from 70 to 75 per cent.

In reference to bonded debt and fixed charges, the condition of the industry demands, perhaps, more conserva-

Rapid Transit of New York with the Boston Elevated Railway Company. The former system operates largely under a 5-cent fare, while the latter operates on a 10-cent fare. The number of revenue passengers carried per dollar of book investment for the Interborough in 1926 was 3.65, for the Boston Elevated, 3.66. Capital invested per dollar of gross for the Interborough, however, was \$5.70 as compared with \$3.49 for the Boston Elevated. While density was practically the same in respect to investment for both roads, the latter company was able to earn a much larger gross on each dollar of invested capital.

¹⁹ During the years 1919 to 1926, inclusive, some 7,694 miles of track were sold under foreclosure. "U. S. Statistical Abstract," 1926, p. 408. A considerable portion was later abandoned as worthless.

tive limits than in the case of electric power and light or gas bonds. Whereas a succeeding equity, which in terms of market value, just equals the amount of bonds outstanding, might well suffice in the former case, a succeeding equity of one and one-half to two times the bonds outstanding should be sought in the case of traction bonds. Likewise, charges should be earned, not two, but preferably from two and one-half to three times, in the case of traction bonds, if one is to obtain protection against further unfavorable developments.

Maintenance and depreciation policies.—A constant check on the maintenance and depreciation policies of the company is likewise highly important. Based on studies made by the American Electric Railway Association, it appears that electric railways in this country since 1913 have neglected car replacements to an extent that requires more than passing attention. The normal life of a car may be considered as twenty years. During the years 1907 to 1924, inclusive, the roads studied by the association owned, on the average, 75,000 cars; so that, on the average, it would be expected that 3,800 new cars should have been purchased annually to replace all the cars over the twenty-year period. For the period studied, however, there were actually purchased only 57,450 cars against theoretical requirements of 68,000.²⁰

In the matter of depreciation, it is difficult to set up an arbitrary ratio that should be charged in all cases. For comparative purposes, however, many statisticians hold that a fair standard for maintenance and depreciation expenses combined is 22½ per cent of gross revenues. A road that is allowing approximately this amount for these two accounts combined is probably being well provided for. High wages and operating costs, however, have caused many companies to defer maintenance at the expense of the roadbed and the equipment. In such cases, the value of the property is impaired and roads which pursue this policy should be avoided for investment purposes.

The franchise and public attitudes: the New York situation.—Electric railway companies operate under franchises in much the same way as other public utilities and they are likewise under legislative control, which, customarily, is delegated

²⁰ "Bulletin No. 48," American Electric Railway Association.

to a utilities commission. It is necessary, therefore, to consider not only the length of life of the franchise under which a particular company operates, but also the terms of the franchise and the possibilities of renewal at maturity. The political situation in the territory is likewise important. The New York City traction companies, for example, have been unable to secure any substantial advance in fares during recent years to offset rising costs, partly on account of the terms of the franchises under which they operate and partly on account of the political situation in New York. Despite a widespread appeal for a revision of their agreements to provide for an increase in fares, the city government has so far refused any real modifications and the basic fare in New York still remains at five cents. As a result, practically all the New York traction companies have gone through drastic reorganizations during the past five years. The Interborough Rapid Transit Company was reorganized in 1922 and the old Brooklyn Rapid Transit Company, which operated, among other lines, all the elevated lines of New York, was reorganized by the formation of a new company known as the Brooklyn-Manhattan Transit Corporation, in May, 1923. As a result of a revision in the rental contracts with the city and a scaling down of capital structures, as well as a reduction in operating costs, these roads are now doing somewhat better than formerly.

Boston Elevated.—In Boston a somewhat similar situation threatened to develop. Rising costs made private operation unprofitable, despite increased fares. Confronted with labor troubles, interrupted service, and receivership, the company and the state of Massachusetts, in 1918, entered into a contract whereby the properties were to be operated by five trustees who were authorized to fix fares and transfer privileges at a point sufficient to cover operating costs and fixed charges, preferred dividends of 7 and 8 per cent on the preferred stock, and a specified dividend rate on common stock.²¹ At the end of the period of public control, which was to last ten years, or longer at the option of the Commonwealth, the road reverts to the board of directors of the company who may continue to operate it on the same cost of service plan.

²¹ Common dividends were to be provided for as follows: \$5 a share for the first two years of public operation; \$5.50 a share for the next two years; and \$6 thereafter.

Chicago Railways Company.—In the case of the Chicago Railways Company there is a distinctly undesirable situation. The old franchises under which this road operated expired February 1, 1927. After that date the company operated on a day-to-day permit. Under the terms of the previous franchise the city was given the right to purchase the properties at a fixed valuation plus additions and betterments. The fixed valuation for January 1, 1927, was \$93,986,705, to which was to be added the actual cost of any additions or betterments made after that date. The voters of the city, in 1925, refused to authorize a purchase of the properties, and the road is now in receivership. All the bond issues of the company matured simultaneously with the expiration of its franchises, and the company was unable to refund them due to the unsatisfactory character of the franchise situation. Consequently the principal of all of its bond issues is now in default, although the receivers still pay interest on the first mortgage bonds.

The original franchise granted in 1907 provided for a five-cent fare, but during the period of War and post War inflation increases were granted, bringing the fare to seven cents in 1926. This increase has been subject to considerable litigation. The political situation in the city of Chicago does not augur well for the financial outlook of this road.

These situations are described for the purpose of emphasizing the need of studying not only the financial factors involved in the operation of a company, but the franchises under which it operates and the relations it enjoys with the public.

Water Companies

General.—The supplying of water is one of the oldest forms of utility service. Important as the industry is to the public, it does not occupy a commensurate place in the field of investment. In many communities, particularly in the larger ones, water systems are owned and operated by the municipality itself. Accordingly, many of the privately owned water works that exist in this country are found in small localities. Only six cities of the United States with a population in excess of 100,000 now have privately owned plants. Furthermore, even in smaller localities, there is a tendency toward municipal ownership. Where private water companies operate, there is often an unsatisfactory political situation that reacts on the popularity of the security.

Sources of supply; territory; population.—In making an examination of the securities of privately owned water companies, the recommended procedure is much the same, in general outline, as that suggested for other utility companies. One should start first with a study of those broader elements of the situation, such as sources of supply, territorial characteristics, and population. One of the most important factors that make for stability in the earnings of water companies is an adequate supply of pure water. It is true that impure water may be made satisfactory by the use of filtration plants, but this adds to production costs. The five most common sources of water supply are as follows: lakes, ponds, springs, rivers, and artesian wells. It is of the utmost importance that the supply, whatever its source, be constant. In the case of lakes, ponds, and rivers, much depends upon the drainage and the regularity of rainfall in the area served. Where the rainfall is irregular, adequate reservoir facilities are necessary to assure supply during times of drought. In the case of artesian wells, there is less dependence on rainfall, yet a sustained drought may jeopardize this supply also.

The nature of the territory served by the water system is also an important factor to analyze. Here our interest lies in the extent to which gravity may be used as a means of distribution instead of a pumping plant. The nature of the soil and the character of the topography also make a difference in the cost of installing and maintaining mains. The density and average per capita wealth of the population in the area served will determine the extent to which plant and equipment can profitably be utilized. Plants serving sparsely settled territories naturally require a much heavier investment in relation to sales than do thickly populated areas. Similarly, wealthy communities use more water per capita than do poorer localities. The problem of distribution in the case of water companies is similar to that found in the case of gas companies, and it is possible to work out the same kind of data representing density and utilization as in the case of gas companies. For example, in comparing one company with another, "customers per mile of main," "population per mile of main," or sales (either in terms of dollars or cubic feet of water) will all prove valuable ratios.

Capitalization statistics.—Similar investigation may be made in respect to capitalization. Thus, we may compare the capitalization "per mile of main," "per thousand cubic feet of water sold," "per dollar of gross revenue," or "per customer" of different companies. It will be found that many of the better managed companies are capitalized from \$35 to \$45 per capita of population served. Cities and towns under 50,000 population should not be capitalized substantially over \$40 per capita. Larger cities can safely show a somewhat higher capitalization if the use of water is greater per customer, although, as a rule, capitalization per capita will be lower in the larger cities.

It was pointed out in the case of hydroelectric companies that the proportion of total capitalization might be relatively high in relation to stock or ownership investment on account of the proportionately large fixed investment. The same applies to water companies. Normally, operating ratios will be low in the case of such companies, because very little labor is required except that used in connection with maintenance and repairs. Most of the investment in water companies is likewise fixed. Accordingly, one may expect to find the ratio of bonds to stock equity relatively high among such companies.

Maintenance and depreciation.—The problem of maintenance and depreciation is present in the case of water companies in no less degree than in the case of other public utilities. While it is true that depreciation may be slow in the case of a water plant, nevertheless it is sure. Furthermore, the aggregate depreciation rate to be applied in different companies will vary. If one company is required to operate an elaborate pumping plant while another depends on gravity, the former may be expected to have a higher depreciation rate than the latter. In any event, depreciation is recognized by the courts as a legitimate charge against earnings in the case of water companies in no less degree than in the case of other utilities.²²

Investment risk and the franchise.—Were it not for the possibility of condemnation proceedings which at all times

²² *Knoxville v. Knoxville Water Company*, 212 U. S. 1, 14, 29 Sup. Ct. 148, 152, 53 L. ed. 371; *Des Moines Water Co. v. City of Des Moines*, 192 Fed. 193. Whereas the matter at issue in the *Knoxville* case was whether it should be allowed to charge depreciation; it is often cited to show the attitude of the courts toward depreciation in general.

threaten private water companies, there would be very little investment risk present. Water companies supply the most necessary of all utility services and unquestionably enjoy the greatest stability of demand for their product. There is no substitution for the products of the water company. Fluctuation in earnings arising from changes in demand are almost unknown in the case of water companies. Furthermore, the credit risk inherent in private enterprises is eliminated, for, if payments are not promptly made upon the rendering of statements, the supply is cut off. Many companies also require advance payments equivalent to normal consumption.

The existence of a long term franchise is not necessarily a protection against possible confiscation, as evidenced by the experience of the Denver Water Works Company. A more desirable situation is found, where the franchise contains a clause in which are defined the exact conditions under which the city may purchase the property. In such cases, there is less likelihood of a dispute arising as to the price and terms under which the municipality may acquire the property.

The danger of confiscation is, of course, minimized, where rates are equitable and reasonable. Where a high rate is necessary to enable the company to show a proper return on its capital, the situation is not entirely desirable, in as much as high rates, regardless of the ultimate return afforded, engender a feeling of hostility. Where rates and the resulting return are both reasonable, private operation may be tolerated for an indefinite period.

Market for water company securities.—Bonds of private water companies, and particularly stocks of independently operated water companies, are not a well-known type of investment. The market for such securities, therefore, is narrow. Nevertheless, issues of the better managed companies invariably sell on as favorable a basis as other utility issues, often because of the local demand that exists for such securities. It cannot be said, however, that the bonds of smaller water companies in distant locations are an attractive investment for the average investor. True, there may be a minimum of investment risk, yet a definite knowledge of this cannot always be easily established, and the outsider often pays a premium to account for a local prejudice in favor of the issue. There are many elements of risk likely to arise in a particular case, be-

cause of local politics and contested features in the franchise which may prove disagreeable to the outside investor, and which the local investor is often in a much better position to anticipate.

Telephone and Telegraph Companies

Organization of the industry.—The telephone field in the United States is dominated by the American Telephone & Telegraph Company, whereas the Western Union Telegraph and Postal Telegraph companies control practically all the telegraph business of the country. The American Telephone & Telegraph Company at one time owned about one fifth of the total common stock of the Western Union Telephone & Telegraph Company and attempted to coördinate the activities of the two companies, but was obliged to abandon this plan in 1913 on account of the attitude of the Government.²³ At the present time, there is no connection between these three companies.

Development of the telephone.—The use of the telephone in this country has shown a remarkable development. In 1902 there was a total of 2,371,044 telephones in use; in 1907, 6,118,578; in 1912, 8,729,592; in 1917, 11,716,520; in 1922, 14,347,395.²⁴ Of the entire number of telephones in use in 1922, slightly over 14,000,000 were either owned by the Bell system or connected therewith; 9,500,000 were actually Bell-owned. In 1926, there were 12,816,000 Bell-owned and Bell-connecting phones out of a total of 17,574,000. It is thus seen that any discussion of telephone and telegraph securities must deal almost entirely with the Bell system, which consists of the American Telephone & Telegraph Company and associated companies.

Analysis of American Telephone & Telegraph Company.—The American Telephone & Telegraph Company is a holding company, which owns all or a substantial part of the stock of some 35 subsidiaries, for the most part telephone and telegraph companies operating in the United States, Canada, and Cuba, and which also operates toll lines through its long

²³ Stehman, J. W., "The Financial History of the American Telephone & Telegraph Co.," pp. 147-154, 1925, Houghton Mifflin Co., Boston.

²⁴ "U. S. Statistical Abstract," 1925, pp. 347, 350.

lines department. It owns over 95 per cent of the stock of the Western Electric Company, which manufactures equipment and supplies. The income which the American Telephone & Telegraph Company receives, therefore, consists of dividends and interest paid on its security holdings, and of payments received for services rendered under contracts with subsidiary companies, which services include the furnishing and maintaining of telephone instruments, providing for interconnections between regional operating companies by long distance lines, short time as well as permanent financing, developmental research, and patent protection in connection with the art of telephony. As in the case of holding companies in general, so here we must consider real earnings to be, not the actual dividends and interest received from securities of subsidiaries owned, but the proportionate equity in undistributed earnings of subsidiaries.

Financial condition of parent company.—Earnings of the parent company have shown a consistent and fairly regular annual increase for many years, as is shown by the following table:

NET INCOME AND DIVIDENDS PAID—AMERICAN TELEPHONE & TELEGRAPH CO.

(Annual Report, 1925)

<i>Year</i>	<i>Net Income</i>	<i>Dividends Paid</i>	<i>Year</i>	<i>Net Income</i>	<i>Dividends Paid</i>
1900	\$ 5,486,058	\$ 4,078,601	1913	\$32,920,090	\$27,454,037
1901	7,398,286	5,054,024	1914	32,334,814	27,572,675
1902	7,835,272	6,584,404	1915	34,618,638	29,100,591
1903	10,564,665	8,619,151	1916	38,013,277	31,122,187
1904	11,275,702	9,799,118	1917	38,471,106	32,481,614
1905	13,034,038	9,866,355	1918	43,901,322	35,229,699
1906	12,970,937	10,195,233	1919	44,395,791	35,356,334
1907	16,269,388	10,943,644	1920	51,821,216	35,376,793
1908	18,121,707	12,459,156	1921	54,002,704	42,674,403
1909	23,095,389	17,036,276	1922	66,170,428	52,971,252
1910	26,855,893	20,776,822	1923	81,692,181	63,274,388
1911	27,733,265	22,169,450	1924	91,046,321	70,918,227
1912	32,062,945	26,015,588	1925	107,405,046	81,044,426*
			1926	116,990,400	86,496,345*

* From Reports for years 1925 and 1926, respectively.

In fact, there has been an increase in annual net income each year since 1900, excepting 1906 and 1914. For the

five-year period, 1922 to 1926, inclusive, total fixed charges for the entire system, including bonds of the American Telephone & Telegraph Company, were earned on the average between $3\frac{1}{2}$ and 4 times, and net earnings available for common dividends reported by the American Telephone & Telegraph Company averaged for the same period \$11.51 per share.²⁵ The monopolistic character of the industry, the vitally important part it plays in our economic structure, the present tendency toward reasonable regulation, combined with the splendid financial record of the company, require that its securities all be given a high rating at the present time.

Subsidiary company investments.—In analyzing the securities of the subsidiary companies of the Bell system, it is necessary to determine the past earning record of the company under consideration, its opportunities for growth, the attitude of local regulatory bodies, and its capital structure. Nearly all the underlying securities, that is, bonds, of the subsidiary companies are relatively safe, and, in the case of some of the larger companies, such as the Southern New England Telephone & Telegraph Company, the New York Telephone Company, the Bell Telephone Company of Pennsylvania, and the Pacific Telephone & Telegraph Company, the stocks occupy a high investment status as well.

Independents limited.—While there are a number of independent telephone companies in the United States, they operate only a limited number of the country's total stations. Investments therein should be made cautiously and only after a careful survey of the territory in which they operate and of their relations with the Bell system, as well as a study of their earnings and capital structure. Furthermore, it is generally true that small independent companies, that is, companies with a gross income of less than \$1,000,000, are at a distinct disadvantage in respect to overhead costs and consequently do not offer satisfactory opportunities for investment.

Telegraphs.—Over four fifths of the land telegraph service in the United States is handled by the lines of the Western Union Telegraph Company and telegraph communication is established with all parts of the world through its cable system and connections. Eight trans-Atlantic cables are operated, of

²⁵ See Annual Report for year 1926, p. 23.

which seven are leased and one (of the new permalloy type) is owned by the company. Some idea of the magnitude of the company is indicated by the fact that at the end of 1926 the system comprised about 200,000 miles of pole lines; 3,300 miles of land line cable; 28,800 nautical miles of ocean cables; and 24,700 telegraph offices. Total miles of wire operated approximated 1,633,000.²⁶

The company is in a strong financial position. At the close of 1926 there were \$72,651,000 of bonds outstanding and \$99,786,530 of common stock (exclusive of a small amount of subsidiary stock). The surplus account stood at \$71,404,042. The book value of the common stock was thus about \$185.50 per share. Operations have grown rapidly since 1922 as shown by the following table:

OPERATING RESULTS—WESTERN UNION TELEGRAPH CO.

(1922-1926, Inclusive)

<i>Year</i>	<i>Gross Revenues (in \$1,000)</i>	<i>Operating Ratio</i>	<i>Times Charges Earned</i>	<i>Earnings per Share Common</i>
1926	\$134,465	88.33%	7.27	\$15.24
1925	127,078	87.05	7.93	16.22
1924	112,862	88.23	6.76	13.37
1923	111,734	87.45	6.90	13.64
1922	105,448	86.91	6.70	13.19

The Postal Telegraph and Commercial Cable systems, known as the Mackay Companies, are also highly regarded, although they do not furnish sufficient financial data to enable one to make an intelligent analysis.

²⁶ "Standard Statistics," Standard Corporation Records.

CHAPTER XVIII

RAILROAD SECURITIES—GENERAL

Importance of railroad securities in American finance.—Among the first enterprises to be conducted under the corporate form of organization in this country were the railroads. Consequently, we find that railroad securities have long played an important part in the American investment field. It might almost be said that investment interest in private corporations before the Civil War was limited to the securities of banks and railroads. Despite the more rapid growth of industrial enterprises after 1865, industrial securities played a relatively unimportant part in our financial history prior to 1900, being decidedly subordinated to those of the railroads. It is true that the recent growth in public utility financing has brought before the investing public an industry with many of the investment characteristics of the railroad industry. Furthermore, the rapid industrial expansion of the twentieth century has resulted in an enormous volume of industrial financing. Nevertheless, it must be admitted that railroad securities to-day still continue to occupy first position both as to investment interest and relative importance.

Capital requirements of the railway industry.—The total par value of all railroad securities outstanding at the end of 1925, according to the Interstate Commerce Commission, was \$18,621,343,023.¹ This figure compares with an estimated

¹ These were divided as to type in the following proportions:

Mortgage Bonds	\$ 7,807,490,797
Collateral Trust Bonds.....	1,065,086,778
Income Bonds	307,898,358
Miscellaneous Obligations	444,927,376
Equipment Trusts	1,052,823,824
<hr/>	
Total Obligations	\$10,678,227,133
Preferred Stocks	1,774,927,081
Common Stocks	6,168,188,809
<hr/>	
Total Stocks	\$ 7,943,115,890
Grand Total Capital.....	\$18,621,343,023

Moody's, "Manual of Investments," "Steam Railroads," 1927, p. xxiii.

total investment in public utility companies, electric light and power, gas, street railway, and telephone, of \$18,844,450,000, in 1926.² Another comparison may be made with two of our most important manufacturing industries. The total capital employed in the manufacture of iron and steel in 1919 was \$8,711,843,000,³ while a similar figure for the automobile industry in 1926 has been estimated at \$2,089,498,325.⁴ These comparative figures are given to show that the mere size of the industry and the volume of railway securities outstanding are alone sufficient justification for the investment interest surrounding the field.

Stability of railway earnings.—Other reasons for the present status of railway securities as premier investments exist, however. The services which the railroads of this country render are, of course, indispensable. For this reason, there is present in the railroad industry a certain stability in earnings and property values, characteristic of most public utility industries, but lacking in the case of most industrial enterprises. Even though railroad earnings fluctuate to some extent in sympathy with business conditions, there is a feeling, well justified by the logic of the situation, that the railroad business is relatively permanent and must grow, over a period of years, to meet the needs of an ever-increasing population.

Monopolistic tendencies in the industry.—If one studies the history of American railroads he will note periods of severe cutthroat competition. There was a time, in fact, when various state legislatures thought that the entire railroad problem could be solved by competition, and, to that end, sought to encourage the building of as many competitive lines as possible. They failed, however, to recognize the fact that the business of railroading is inherently monopolistic. Indeed, the situation is analogous to that found in the public utility field. Cutthroat competition is inevitable, where two or more roads operate in a territory, unless there is sufficient business to keep all lines operating at capacity, or unless rates are strictly regulated by a powerful commission as at present. The ultimate result of this cutthroat competition is either the absorption of the weak lines by the strongest or else some sort of an agree-

² Moody's "Public Utility Manual," 1927, p. xviii.

³ "U. S. Statistical Abstract," 1923, p. 292.

⁴ See note 1, p. 38.

ment to maintain rates. In the end, competition is supplanted by monopoly. This is logical, in view of the operation of the economic law of increasing returns, which applies so directly to the railroad industry. Until there is adequate traffic to keep one line operating at full capacity it is uneconomical to build another; and even then it is generally cheaper to expand the facilities of the first, rather than to promote a new company.

Commission control, desirability of.—The real solution to the railroad problem, therefore, is to be found in a system of privately owned railroads, operating under conditions of monopoly, but regulated by some sort of commission. This assures the economies of large scale operation, but safeguards the public against unreasonable rates. The legal justifications for legislative or commission control of public utility enterprises have already been discussed at length in previous chapters and will not be reiterated at this point, for precisely the same arguments apply to the railroad industry as apply to public utilities.⁵ At the present time, there is no attempt to encourage competitive railroad building, but rather to effect proper control over privately operated roads through the Interstate Commerce Commission. The idea of competition has not been entirely given up, it is true, in that mergers of competing lines are still looked upon askance. Nevertheless, rates are now initiated, not by the roads but by the Interstate Commerce Commission, and such competition as is effected, therefore, must be in matters of service, not of charges. Consequently our railroads are not subject to the same forces of competition that constantly threaten the profits of industrial enterprises, and for that reason the profits of any given railroad company are likely to be far more uniform over a period of years than are the profits of a typical industrial company.

Effect of commission control on profits.—In our study of public utility investments, it was found that the existence of legislative control, exercised through some form of commission, has a beneficial effect on the operating company, where this control is exercised in an enlightened manner. Of course, legislative control may be burdensome, and, even though it is not the intention of the legislature or commission to assume an arbitrary position, the inability of commissions to recognize changing economic conditions as rapidly as necessary sometimes operates to the disadvantage of the regulated industry.

⁵ See Chapter XV.

It must be recalled that the commission is a quasi judicial body and acts only upon consideration of proper evidence. Accordingly, when operating costs advance rapidly, as they did during and after the World War, it is impossible, in many instances, for the various utility and railroad commissions to act on applications for rate increases in sufficient time to relieve the regulated companies from all losses. Nevertheless, where judiciously exercised, commission control is on the whole advantageous to investors in public utility enterprises.

Legislative control over railroads: Interstate Commerce Commission.—At first the railroads of this country were regulated largely by state legislatures or state commissions. In 1887 the Interstate Commerce Commission was created for the purpose of regulating railroads engaged in interstate commerce. The act of 1887 marks the real beginning of a long era of development in the solution of the railroad problem in this country. The Commission at that time was granted the power to determine reasonable maximum rates, and to require accounting reports at such times and in such forms as it saw fit. Discrimination and pooling were forbidden and rates were required to be published. The act, however, was not clearly worded in all sections and a long series of legal battles was fought over disputed points. The courts in many cases decided in favor of the railroads. Subsequent legislation, therefore, became imperative.

The first important amendment to the original act was known as the Elkins Amendment of 1903. This dealt largely with the evils growing out of personal discrimination and rebates and did not greatly enlarge the powers of the Commission. The Hepburn Act of 1906, however, did substantially increase the Commission's powers. Of particular significance to us was the power given to the Commission at that time over rates. This act provided that whenever, after full hearing and upon complaint, the Commission should be of the opinion that the rates of common carriers, or their regulations and practices affecting such rates, were unjust and unreasonable, it was empowered to prescribe the maximum rates, and the regulations and practices thereafter to be observed. Furthermore, the Commission's orders (except for the payments of money) were to take effect within not less than thirty days and to continue in force for not more than two years, unless suspended or set aside by the Commission or the courts.

The power of the Commission over railroad accounts was likewise enlarged. Whereas the act of 1887 had authorized the Commission to require the railroads (and other common carriers) to make annual reports, to answer specific questions put to them, and to adopt a uniform system of accounts, the Commission was hampered both by lack of authority to inspect and audit the accounts of railroad companies, and by the fact that means of enforcement were inadequate. The necessary mandatory provisions were applied by the so-called Hepburn Act, which provided that the detailed annual reports to be rendered by the carriers must be made under oath and filed with the Commission within three months after the close of the year to which they apply. Furthermore, the Commission might call, not only for annual reports, but also for monthly reports of earnings and expenses, and for special reports. The Commission was even given the power to prescribe the forms of all accounts kept by the roads, and no other accounts might be kept other than those prescribed or approved by it. The Commission had the further right of access at all times to accounts of the road and authority to employ special examiners for purposes of audit and inspection. Severe penalties were prescribed for violations, and particularly where false entries were willfully made.

The next important revision in the powers of the Commission was made in the Mann-Elkins Act of 1910. From our standpoint, the most important change made at this time again pertained to control over rates. This act provided that, whenever there should be filed with the Interstate Commerce Commission any new rate, fare, or classification, the Commission should have authority, either on complaint or on its own initiative without complaint, to enter upon a hearing concerning the propriety of the proposed change. The old rate or classification remained in force pending the hearings and decision on the application, for a period of 120 days beyond the time when they would have gone into effect. And if the Commission was unable to decide the case within 120 days an extension of six months might be made. Under the provisions of this act the entire burden of proof as to the reasonableness of the proposed rates rested on the railroad and not, as hitherto, on the Commission.

There were other important provisions in the Mann-Elkins Act, particularly those applying to the long and short haul

problem, and to the institution of the short lived Commerce Court. It was the broad extension of the rate making provisions, however, that had the most important effect on the investment status of railroad securities.

The act of 1910 authorized the Commission to suspend proposed changes in rates, and, if it found them unreasonable, to prevent their going into effect. This, however, required some sort of yardstick by which reasonableness could be measured. In other words, the question of "fair value" for rate making purposes was immediately raised. In 1913, therefore, Congress passed the so-called Valuation Act, which directed the Commission to ascertain the value of all the property owned or used by every common carrier subject to the provisions of the act. More specifically, it was directed to ascertain and report in detail as to each piece of property used for common carrier purposes, the original cost to date, the cost of reproduction new, the cost of reproduction less depreciation, and to indicate the methods by which these costs were obtained. The Commission was also directed to report separately all other values and elements of value, if any, and the methods of value employed. In ascertaining the original cost, the Commission was to investigate the history and organization of the corporation operating the property, its earnings and expenditures, and its assets and issues of securities. Further analysis was to be made of the original cost of all lands, rights of way, and terminals, and their present values. Properties acquired by gifts were to be separately shown. While the Commission was empowered to prescribe the method of procedure to be followed in carrying out its investigations, and the form in which results were to be submitted, nevertheless, it was required to show the value of the property of every carrier as a whole and to show separately the value of its property in every state and territory. The work of valuation, started in 1913, is not yet complete, and it is doubtful that the task will ever be considered as finished. Nevertheless, much work has been done, and the valuations established for the various roads are of special significance in view of the present control which the Commission is given over rates.⁶

Effect of Mann-Elkins Act on railroad rates and earnings.—The decade from 1910 to 1920 witnessed changes in our economic structure of a revolutionary nature. The War, with

⁶ See p. 459.

its abnormal inflation in prices of commodities and wages, is familiar to all students of economics. Had the situation, as it existed in 1910, changed only gradually, it is probable that many years would have passed before any marked change took place in the attitude of the Commission and of Congress toward the railroad problem. During the first years that the Elkins Act was in effect, reasonable rates meant rates favorable to the shipper, and not to the railroads. The Commission consistently refused to assume any obligations to assist the carriers in earning a fair return on their property values and moved very reluctantly during this period in granting any increases in rates. The relief which the roads might obtain from the courts was also delayed in view of the length of time required to hear rate cases. And the losses incurred through inadequate rates pending hearings were irretrievably lost so far as the roads were concerned. In fact, from 1910 to 1920 railroad earnings were so seriously affected by advancing costs and adverse decisions in respect to applications for higher rates that new capital investments were actually discouraged.

Shortly after the passage of the Mann-Elkins Act of 1910, the railroads applied for increases in rates on the plea that higher operating costs were reducing their profits below reasonable levels.⁷ In February, 1911, two decisions were rendered by the Commission in which the requests for higher rates were denied.⁸ The next important decision dealing with the carriers' application for advanced rates was the so-called Five per Cent Case, decided on July 29, 1914.⁹ In this case the Commission found the net operating income of the railroads in "official classification" territory (trunk line territory) to be smaller than was demanded in the public interest, but it gave very little relief. It approved, with some exceptions, an increase of 5 per cent as requested by the railroads on intra-territorial class or commodity rates in certain parts of this territory only. Other requests were denied. Shortly after the outbreak of the European War the entire 5 per cent advance

⁷ The Mann-Elkins Act, it will be recalled, gave the Commission power to suspend the operation of new rates for a period of 120 days pending a hearing as to reasonableness. If this was insufficient an additional period of six months was allowed.

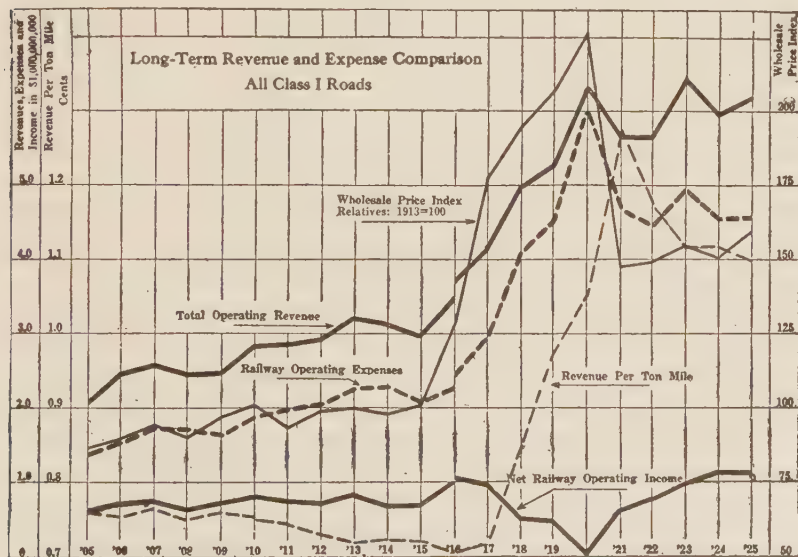
⁸ 20 I. C. C. Reports, 243-306 (eastern case), and 307-399 (western case).

⁹ 31 I. C. C. Reports, 351-454.

as requested was allowed (December 16, 1914).¹⁰ On July 30, 1915, and again on June 27, 1917, two other cases were decided involving advances in rates.¹¹ The first case involved advances in rates on "western classification" territory; the second, advances in all territories. Such increases as were granted, however, were inadequate to meet rapidly rising costs.

Effect of low earnings on railroad credit.—The attitude of the Commission up to this time had been such as to destroy confidence in railroad securities. Total net operating income of all Class I railroads failed to register any important increase from 1912 to 1920, except for the year 1917, when substantial advances were granted to meet War conditions. After 1917 earnings declined to extremely low levels in 1920. The following chart illustrates the effect of low railroad rates and advancing costs on net railway operating income during the period under consideration.

Fig. 22.



"Standard Statistics," Standard Service on Railroads.

¹⁰ 32 I. C. C. Reports, 325-354.

¹¹ See 35 I. C. C. Reports, 497-681, and 45 I. C. C. Reports, 303-355, respectively.

The Commission's attitude during this period was passive, in that it felt under no obligation to assist the roads to earn an adequate return on their property values. This fact, combined with the results of government operation from March 21, 1918, to March 1, 1920, brought the state of railroad credit to the lowest point in the present century. The situation was so acute at the beginning of 1920 that substantial relief was necessary at once if the carriers were to secure the capital necessary to make such extensions as were absolutely required by the rapid expansion that had taken place in other industries from 1910 to 1920.

Transportation Act of 1920: rate making powers.—This relief was given through the passage of the so-called Transportation Act of 1920, which marks a radical departure in the philosophy of government regulation of railroads. Again, the most important provisions of the act pertain to the rate making powers of the Commission. For the first time since 1887 the Interstate Commerce Commission was given complete power to establish rates for all carriers in respect to interstate commerce, with the provision that "rates shall be adjusted from time to time so that the carriers as a whole, or as a whole in each rate group or territory, will, under honest, efficient, and economical management and reasonable maintenance expenditures, earn an annual net railway operating income, equal as nearly as may be, to a fair return upon the aggregate value of the property of such carriers held for or used in the service of transportation." In order properly to carry out this provision, it was necessary for the Commission to expedite its valuation work. Pending the computation of final valuations for the various railroads the Commission was directed to make tentative valuations as a basis for rate making. During the first two years, beginning March 1, 1920, the Commission was required to adopt $5\frac{1}{2}$ per cent as a fair return on the actual value of railroad properties; at its discretion, however, it might add a sum not to exceed a total of $\frac{1}{2}$ of 1 per cent for improvements, betterments, or equipment chargeable to capital account. In May, 1922, the Commission handed down a decision that "on and after March 1, 1922, a fair return upon the aggregate value of the railway property of the carriers as defined in section 15a of the Interstate Commerce Act, determined as therein provided, will be 5.75 per cent of such aggre-

gate property value as a uniform percentage for all rate groups or territories designated by this commission."

Further consideration of rate making powers of 1920 Act: recapture of excess earnings.—Liberal as the act of 1920 was in the light of the past treatment which the roads had been accorded, a further examination does not give the impression that it erred in granting the roads too much. It can scarcely be said that a $5\frac{1}{2}$ or $5\frac{3}{4}$ per cent return is excessive, particularly when one recalls that frequently public utilities are allowed to earn between 7 and 8 per cent. Furthermore, there is no guaranty assumed by the government to the effect that any one road will earn the allowed rate, only that rates shall be so determined as to allow a fair return *on the aggregate value of railroad property in the rate territory*. On the other hand, if the net railway operating income of a road in any year is in excess of 6 per cent of the value of the property, it shall be utilized as follows: (1) one half of such excess shall be placed in a reserve fund maintained by the railroad; (2) the remaining one half shall go into a general railway contingent fund. This clause, known as the recapture clause, was contested in the courts and upheld by the Supreme Court, January 7, 1924.¹²

Railroad consolidations.—Another interesting phase of the present attitude of the government in respect to the private operation of railroads pertains to consolidations. The Transportation Act of 1920 contemplates the ultimate consolidation of all the railroads of the United States into a limited number of competing systems, and, under one of the provisions of the act, the Interstate Commerce Commission is directed to prepare a plan for this purpose. In the original act the provision was not compulsory, although since 1920 efforts have been made to compel action on the part of the roads toward consolidation. The first step taken by the Commission under the 1920 act was to engage Prof. W. Z. Ripley, of Harvard University, to formulate a plan of consolidation. This plan was put forward in 1921 as a basis for discussion.¹³ Hearings

¹² Dayton-Goose Creek Ry. Co. v. United States, 263 U. S. 456.

¹³ An outline of this plan will be found in the *Chronicle*, Vol. 113, pp. 1429 to 1431, and 1950 to 1952. A table showing the grouping of roads in the plans of consolidation under consideration by the I. C. C. also appears in Vol. 119, pp. 628, 629. The student will do well to consult these tables.

have already been held on the different plans under consideration and some positive action has actually been taken. Early in 1925 the Chicago, Rock Island & Pacific purchased the stock holdings of Edwin Gould in the St. Louis, Southwestern Railway, which, coupled with certain other shares acquired, gave it control of this road. Certain objections to this consolidation were made and, while discussion was taking place, it developed that the Kansas City Southern had acquired control from the Rock Island of the St. Louis, Southwestern, as well as an interest in the Missouri-Kansas-Texas, in an effort to effect a consolidation acceptable to the Interstate Commerce Commission.

Early in 1926 the Commission denied an application of the Van Sweringen interests to unify under control of the New York, Chicago & St. Louis Railway (new), the present New York, Chicago & St. Louis Railroad, the Erie, the Pere Marquette, the Chesapeake & Ohio, and the Hocking Valley. This rejection was based chiefly on the proposed financial structure, which denied voting power to the preferred stockholders and concentrated control largely in the hands of the bankers. A new financial plan for effecting this consolidation is now under way.

The present attitude of our Government in respect to consolidation is logical. Quite apart from the greater economies to be effected, consolidation of the roads into large competing systems will also facilitate the operation of the present rule of rate making by creating systems of equal strength. The problem of weak roads, which can never expect to show an adequate return under any reasonable rate structure if left to operate alone, is thus eliminated. Competing systems of equal strength may expect to fare alike under the same rate level. One may anticipate, therefore, further important developments along these lines.

Interstate Commerce Commission and new security issues, changes in physical assets and accounting.—There are other matters over which the Interstate Commerce Commission now has jurisdiction. Of particular interest here is the exclusive control which is given the Commission in respect to the issuance of all railroad securities, except notes maturing in less than two years, when the total issues of such notes amount to less than 5 per cent of the road's total capitaliza-

tion. The Commission likewise has jurisdiction over all important extensions or abandonments of present property as well as complete jurisdiction over all matters of accounting. The extent of the Commission's power over the accounting of the railroads has already been discussed in connection with the Hepburn Act.

The reason for such control is much the same as in the case of public utility companies. The Commission is charged with allowing a fair return on the value of railroad property used in the public interest and incurs, therefore, a certain moral obligation toward the investor in railroad securities. That is, while the Commission is in no way actually responsible for the return shown on any investment in the hands of the public, the mere fact that it is required to permit rates which will yield an adequate return on property values places at least a presumptive burden on it in respect to the soundness of the securities issued by the railroad to acquire new property. If it appears that the property to be acquired cannot reasonably be expected to earn an adequate return under reasonable rates, because of anticipated traffic conditions, or if the new financing to be done results in undue charges, which later may be incorporated in property values, it is logical that the Commission should be given the right to pass on such matters in advance, thus protecting to some extent the investor as well as those who might later be required to pay the cost of unproductive financing through higher rates. Finally, control of accounting matters is necessary if earnings are to be properly determined.

Railroad valuation.—In our study of public utilities we found that the entire matter of rates was closely associated with the problem of valuation. So it is in the case of railroads. It has been noted that, as early as 1913, Congress passed the so-called Valuation Act, by which the Interstate Commerce Commission was directed to ascertain the value of all the the property owned or used by every common carrier subject to the provisions of the act. It is unnecessary to go into the various theories of valuation at this point, since the problem does not differ substantially from that presented in the case of utilities.¹⁴ In the Valuation Act no specific basis for valuation was adopted, but the Commission was directed to ascertain

¹⁴ See Chapter XV.

and report in detail as to each piece of property used for common carrier purposes, the original cost to date, the cost of reproduction new, the cost of reproduction less depreciation, and to indicate the methods by which these costs were obtained. The Commission was also required to report separately all other values and elements of value, if any, and the methods of valuation employed. Various other directions were given the Commission in respect to investigating the history and organization of the corporation, and also earnings, expenditures, security issues, original cost of property, improvements, and the value of gifts and land grants. The Commission was empowered to prescribe the method of procedure to be followed in conducting investigations as well as the form in which such results are submitted. It was necessary, however, that the value of the property of every carrier as a whole be reported, as well as the value of its property in each state and territory.

The task of valuing all the roads of the country was one of great magnitude. Prior to 1920 very little was produced in the way of final results. In that year a tentative valuation of \$18,900,000,000 was adopted by the Commission for all railroad property as against a then existing book value of \$20,040,520,611. This valuation was adopted for the purpose of determining the rate adjustments necessary at that time to afford the 6 per cent return prescribed by the act of 1920. By November, 1927, final valuations had been set on 570 carriers.¹⁵

It is important in analyzing railroad securities to compare *net railway operating income* with the valuation set for the road. Where over 6 per cent has been earned thereon, earnings should be adjusted by deducting one-half the excess. In this way a more accurate idea may be obtained as to just how much has actually been earned in the interest of the stockholders. One half of all excess earnings, it will be recalled, are subject to recapture by the Government.¹⁶

¹⁵ A list of 279 carriers, together with the valuations set by the Commission, will be found in *Railway and Industrial Compendium, Chronicle*, May 29, 1926, p. 5. Subsequent valuations have been published from week to week in the General Investment News Department of the *Chronicle*. See *Railway and Industrial Compendium*, Nov. 26, 1927, p. 4.

¹⁶ This subject is again discussed on p. 506.

Railway Labor Board and wages.—Whereas the Interstate Commerce Commission had virtual control over rates before 1920, without the obligation of providing an adequate return on property investment, the act of 1920 went further and placed this obligation on the Commission. The problem of a "fair return," however, is twofold. Rates produce revenues, but final earnings depend on expenses. It was somewhat anomalous that the same body that heard rate cases should not have been given jurisdiction over wages. Nevertheless, authority in respect to the latter was granted to the so-called Railroad Labor Board, created under the act of 1920. This Board was given authority to hear disputes regarding wages and working conditions that could not be adjusted by direct negotiations, and to make findings in connection therewith. Although such findings could not legally be enforced, the decisions of the Board had considerable weight. The practical result of this situation was, therefore, to give the Labor Board power to establish wages and working conditions of railroad employees, while it had no responsibility in respect to rates. Such a situation becomes more illogical when one considers that wages constitute an important part of the total expenses of railroad operation, and, hence, have a vital effect on earnings.¹⁷ In fact, the first act of the newly created Board was

¹⁷ The following table illustrates clearly the importance of the item "labor costs" in railroad operation and also shows the extent to which advances in wages ate into gross revenues from 1916 until 1926:

LABOR COSTS AND REVENUES, CLASS I RAILROADS, 1916 TO 1926, INCLUSIVE *

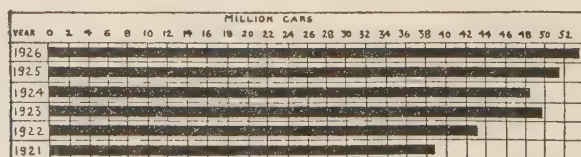
<i>Calendar Year</i>	<i>Average Yearly Wage</i>	<i>Total Labor Cost</i>	<i>Gross Operating Revenue</i>	<i>Net Operating Income</i>	<i>% Return on Prop. Value</i>
1916	\$ 892	\$1,468,576,394	\$3,596,865,766	\$1,040,084,517	6.16
1917	1,004	1,739,482,142	4,014,142,747	934,068,770	5.26
1918	1,419	2,613,813,351	4,880,953,480	638,568,603	3.51
1919	1,486	2,843,128,432	5,144,795,154	454,984,953	2.46
1920	1,820	3,681,801,193	6,178,438,459	17,226,902	0.09
1921	1,666	2,765,218,079	5,516,798,242	600,937,356	3.07
1922	1,623	2,640,817,005	5,559,092,708	760,187,319	3.83
1923	1,617	3,004,071,882	6,289,580,027	961,955,457	4.66
1924	1,613	2,825,775,181	5,921,496,325	973,837,202	4.54
1925	1,640	2,860,599,920	6,122,509,856	1,121,076,341	4.97
1926	1,655	2,946,118,103	6,382,939,546	1,213,089,966	5.11

* These figures show the return on the investment in road and equipment without any reference to materials and supplies on hand or to working capital.

to grant an average increase in wages of 22 per cent, thus adding approximately \$600,000,000 per annum to the total railroad pay roll. Subsequently, there were some adjustments downward in wages made by the Board and, on May 20, 1926, the old Labor Board was abolished. At that time the Watson-Parker railroad bill created a Board of Mediation to be appointed by the President to hear such disputes as cannot be settled directly between employees and the road and to report its findings within 30 days.

Developments since 1920.—The history of railroad regulation subsequent to 1920 will not be discussed in detail.¹⁸ It will be sufficient to state that very substantial advances in rates, calculated to add some \$1,500,000,000 to their revenues, were granted the railroads in the latter part of 1920. The immediate effects, however, were most disappointing, on account of the heavy decrease in traffic caused by the severe depression which set in during 1920 and lasted until 1922. Subsequently, some reductions were made in wages, and particularly were the working rules established during the War revised in 1922. Some reductions have been made in railroad rates since 1920, notably on agricultural products, and railroad operating costs have been substantially reduced through increased efficiency and lowered material prices. During the same period the amount of traffic handled has increased rapidly. The following chart shows the total number of revenue cars of freight handled from 1921 to 1926, inclusive.

Fig. 23.—Chart Showing Total Number of Revenue Cars of Freight Handled 1921 to 1926, Inclusive.

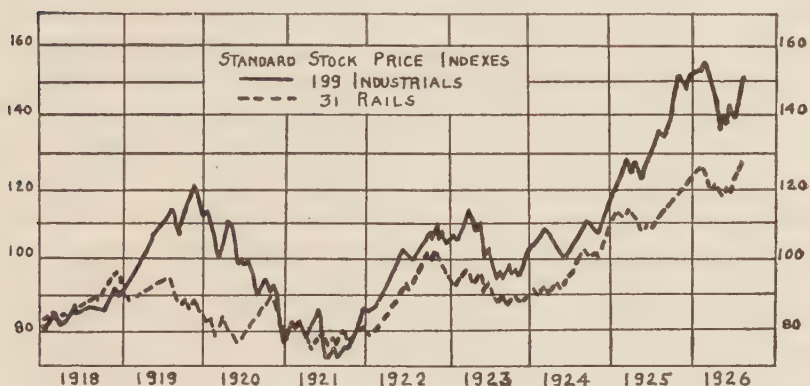


At the present time, therefore, the railroads have overcome in substantial measure the adverse condition brought on by the

¹⁸ An excellent résumé of all important action in regard to rate changes, decisions of the Railroad Labor Board, wage changes, and consolidation will be found in the various Railway and Industrial Compendium sections, *Commercial and Financial Chronicle*, published semiannually.

War, with the result that their securities have regained their former enviable position as shown by the movement of railroad stock prices as compared with industrial stock prices. The following chart¹⁹ shows the market movement of industrial and railroad stocks from 1918 to 1926:

Fig. 24.—Comparative Movement of Railroad and Industrial Stock Prices, 1918 to 1926, Inclusive.



Effects of government control on security values.—Discussion so far has been confined to the peculiar situation created for railroad securities by the existence of close government supervision. Obviously, such supervision has both advantages and disadvantages to investors. If government control is carried to the point of denying the roads of the country adequate earnings, as was the case during the decade preceding 1920, the security holder, particularly the stockholder, is made to suffer. On the other hand, more enlightened control, such as now appears to be in order, reacts to the advantage of the security holder in many ways. Earnings are stabilized by rigid control of rates and the limitation of competition. The publicity given to railroad accounts also enables the security holder properly to judge values. Control over new security issues likewise prevents exorbitant banking fees and injudicious financing. Of course, it is impossible to predict the future attitude of the government in respect to the railroad problem. There

¹⁹ Adapted from Standard Service on Railroads, Standard Statistics Co., Inc., *Railroad Statistical Annual*, p. 5, issued July 31, 1926.

is always an insistent demand on the part of shippers for lower rates. Such a demand has asserted itself most vigorously in agricultural areas, where the prices of agricultural products are determined by world wide conditions, while the prices of machinery, equipment, labor, and transportation, so necessary in raising and marketing such products, are determined by conditions within the United States. A situation of this kind can easily result in a maladjustment, and, in fact, has so resulted. After the War, the prices for agricultural products declined very rapidly, while the prices of many things, including transportation, that were used by the farmers, failed to decline anywhere nearly so much. The farmer, therefore, was left in a serious situation. Failing to understand fully the economics of the situation, he felt that he had been unfairly treated. And since he felt discriminated against because of the seemingly exorbitant prices for machinery, clothes, and other articles he consumed, he was inclined to make the entire question of railroad rates a political issue. In fact, it is probably the fear of political pressure that has kept the Commission from raising rates in the Northwest, where the carriers have consistently failed to earn the required rate on property values. It is necessary, therefore, for investors in railroad securities, particularly in stocks, to pay close attention to the political situation, for this has a vital relation to the earnings which carriers may be expected to show over a period of years.

Capitalization.—Other matters of general interest to the student of railway securities will now be considered. In taking up first the matter of capitalization one is impressed with the fact that the railroads of this country are large borrowers. At the end of 1925 the total capitalization of railroads, including switching and terminal roads, was \$23,644,000,000; while the funded debt amounted to \$14,105,000,000, or 59.7 per cent of this amount, and stocks, to \$9,530,000,000, or 40.3 per cent.²⁰ Using a previously adopted phrase, we might say that the railroads have traded on a rather thin equity, in that the owners, or stockholders, had invested in this enterprise considerably less than the creditors. While it is true that the per cent of obligations outstanding to capital stock has not changed greatly since 1913, new financing during the period from 1913 to 1923 was largely in the form of obligations.

²⁰ "U. S. Statistical Abstract," 1926, p. 384.

This situation is due partly, at least, to the decline in railroad credit which took place after 1910 and which required financing by bonds rather than by stock issues.²¹ It is to be hoped that the present revival of railroad credit will be sufficiently sustained to permit the roads to finance coming extensions largely through stock issues. There is a limit, as will be seen presently, to the extent to which a given road can conservatively issue bonds, despite the relatively low business risk which the industry as a whole enjoys.

Fluctuations in railroad earnings and business conditions.—While it is true that the gross earnings of railroads will inevitably fluctuate with business conditions, it is not to be assumed that such earnings are subject to all the hazards that surround earnings of industrial concerns. The forces of cut-throat competition are largely eliminated. The entire question of style changes is eliminated and, except for bus and truck competition in respect to passenger and short haul freight business, there appears to be no danger of excessive competition from substitute methods. Furthermore, the industry is basic and may be expected to show the normal increase in volume of business handled that one would expect to develop from increases in population and material wealth.

Effect of operating expenses on net income.—Net operating income, as distinct from gross revenues, may be said to depend in part on gross revenues, but also on operating expenses. This matter has already been considered to the extent of showing a chart on which wholesale prices, total operating revenues, railway operating expenses, and net railway operating income were plotted for a period of years (see page 455). The impressive fact brought out by this chart was the close correlation between movements in the curve of wholesale prices and in that of operating expenses. In view of the rigidity that prevails in respect to rates, occasioned by the reluctance on the part of the Interstate Commerce Commission to make changes one way or the other in rate levels until the situation on which the change is based is regarded as permanent, it may be inferred that declining prices, unless accompanied by a severe falling off in general business, are advan-

²¹ See "Changes in Financial Structure, and Financing Operations of Railroads since 1913," by F. Ernest Richter and George A. Boyd, *Harvard Business Review*, Vol. III, No. 1, pp. 54-68.

tageous to the roads. This has certainly proved to be the case during recent years, as indicated by the decline in operating ratios which has accompanied declining prices and wages since 1920.²² On the other hand, advancing prices and labor costs are disadvantageous, in that rates may not be expected to increase as rapidly as prices, owing to the existence of Commission control. It is accordingly desirable for the investor to keep in close touch with price trends, especially in respect to coal, steel, and such other items as constitute an important part of railroad purchases.

Data available in respect to railway operations.—Further information is easily available to the investor in railroad securities. Such an investor should know the important sources of data relative to both the operation of individual roads, and to the industry as a whole. The most important official sources of information are the various reports issued by the Interstate Commerce Commission. Among other reports this Commission issues a monthly report on "operating revenues and operating expenses of large steam roads—selected items for roads with annual operating revenues above \$25,000,000." This report covers operating revenues by major divisions, passenger and freight, operating expenses, net railway operating income, and certain operating ratios. Another report published monthly covers operating statistics of large steam roads.²³ Such items as miles of road operated, locomotive miles and car miles, ton miles, average number of locomotives on line, average number of freight cars on line, and statistics of loadings are covered in this report. The Commission also publishes revenue traffic statistics, wage statistics, and fuel used for road locomotives in freight and passenger service. In the latter

²² Combined operating ratios of all Class I roads, 1912 to 1926, were as follows (Moody's "Manual of Investments," "Railroads," 1927, p. xxxiii):

OPERATING RATIOS, CLASS I ROADS

(1912 to 1926, inclusive)

<i>Year</i>	<i>Ratio</i>	<i>Year</i>	<i>Ratio</i>	<i>Year</i>	<i>Ratio</i>
1912-13	69.37	1917	70.71	1922	79.32
1913-14	72.26	1918 (Year) ..	81.58	1923	77.77
1914-15	70.65	1919	85.52	1924	76.14
1915-16	65.58	1920	94.38	1925	74.71
1916-17	68.15	1921	82.71	1926	73.17

²³ "Operating statistics of large steam roads, selected items for the month of ———, for roads with annual operating revenues above \$25,000,000."

report fuel costs, as well as the amount consumed, are computed. A quarterly report is published covering a summary of freight commodity statistics of Class I roads. This report shows the amount of traffic, classified by important commodities, originating in different sections of the United States. The Commission requires all roads doing an interstate business to file in Washington sworn returns of operating revenues and expenses. These are published by the *Chronicle* in a monthly supplement designated "Railway Earnings." From this supplement it is possible to ascertain monthly operating revenues and expenses for any Class I road in the country.

The American Railway Association, which is a voluntary organization supported by the railroads of this country, likewise issues certain important statistical material. Weekly data on car loadings are published showing the total number of cars loaded with all classes of traffic, together with loadings for some of the more important classes. This report is valuable, in that it keeps the investor informed as to the current business being handled by the railroads as a whole, and thus gives some indication regarding future earnings.²⁴ Another report issued semimonthly contains a statement for each Class I road of revenue freight cars awaiting repairs, and the percentage of such cars to total cars "on line." A similar report is issued showing the condition of locomotives. These reports combined give the investor a very complete picture of the condition of equipment of the road. The Association has set 5 per cent as the standard ratio of bad order cars to total on line, and 15 per cent as the logical ratio of bad order locomotives to total on line. A road, therefore, which attains these ratios may be considered to have its equipment in reasonably good shape. In order to show how this material may actually be used, the following table, which includes only five roads, is given:

CONDITION OF EQUIPMENT, JULY 1, 1926, SELECTED ROADS

Road	Total Cars on Line	ALL CARS AWAITING REPAIRS			Per Cent Total Cars on Line	Total Loco- motives on Line	Number Need- ing Repairs	Per Cent to Total on Line
		Heavy	Light	Total				
Atchison, Topeka & St. Fe	81,175	2,520	1,505	4,025	5.0	2,064	321	15.6
Chicago, Milw. & St. Paul	70,275	3,971	530	4,501	6.4	2,023	298	14.7
Pennsylvania	272,142	23,297	6,090	29,387	10.8	6,882	1,301	18.9
Pere Marquette	18,722	623	275	898	4.8	446	43	9.6
Southern Railway	73,641	2,978	1,160	4,138	5.6	2,246	313	13.9

²⁴ These data are reprinted in many financial papers and, therefore, are available to investors in secondary form.

Still a third report published by the American Railway Association gives a summary of car surpluses and car shortages for various roads. In this report the various roads are grouped by territorial divisions and totals for each division are given. This report, used in connection with that covering volume of traffic handled, will show the relative efficiency with which traffic is handled from time to time.

The Bureau of Railway Economics is another organization supported by the railroads and devoted primarily to statistical and research work. From time to time it publishes studies of a general nature covering the results of the railroad operation as well as a monthly report covering an analysis of railway revenues and expenses for various divisions of the United States. This report also carries a recapitulation of the sworn monthly returns of income and expenses which each individual road is required to make to the Interstate Commerce Commission.

The investor must next consider the annual reports of the separate railroad companies themselves, as giving most complete and accurate information regarding the operations of each road during the preceding year. Unlike the financial reports of industrial and public utility companies, the reports of railroad companies are pleasingly uniform. Every item is similarly handled and the final form in which the income account and balance sheet of one road are set up is the same as that used by all other roads. The reason for this lies in the fact that the Interstate Commerce Commission has complete jurisdiction over all accounting matters and prescribes the accounting procedure to be followed by all roads doing an interstate business.²⁵

Territorial survey of important railway systems.—Early railroad history in this country was characterized by the growth of innumerable small lines. Gradually, however, well defined systems came into being which absorbed many of the smaller independent companies. The culmination of this movement is found in the great consolidations which took place during the period from 1890 to 1907. Even though the railroad net was simplified by this movement, at least so far as ownership is concerned, it is still too vast and is composed of

²⁵ See pp. 490 and 504, for specimens of such reports.

too many parts to be readily comprehended as a whole. There are at present over 250,000 miles of track operated in this country, while the Interstate Commerce Commission lists 201 Class I railroads alone, that is, roads with an annual gross income in excess of \$1,000,000. The difficulty of sketching a simple picture of this complex structure is apparent.

Freight classification territories.—The most general and frequent grouping of railroads, territorially, is into three sections: one section, the eastern district, comprising that portion of the country north of the Ohio and Potomac rivers and east of the Great Lakes and a line drawn from Chicago through Peoria to East St. Louis and thence down the Mississippi River to the mouth of the Ohio River; another, the southern district, south of the Ohio and Potomac and east of the Mississippi; and the third, or western district, the region west of the first two. This is the geographical division adopted for freight classification purposes.

Geographical grouping of railroad systems.—A more detailed geographical division of railroads is into the following groups: roads operating in trunk line territory; New England roads; roads in South Atlantic territory—the coalers; South Central and Southwestern roads; and the Northwest roads, including the Grangers. In order to give the student a bird's-eye view of the present railroad map, the more important roads operating in each of these territories are briefly described.

Trunk line roads.—Both historically and from the standpoint of traffic hauled so-called trunk line territory is the most important railroad area in this country. This area may be described as a belt of territory extending from New York and Baltimore on the eastern seaboard to Chicago and St. Louis in the west. The New York Central and the Pennsylvania are the best known roads operating in this area. The New York Central extends from tidewater at Boston and New York City to Cincinnati, Chicago, and St. Louis. This road has two routes from Buffalo to Chicago—one by the Michigan Central through Detroit, the other by the Lake Shore through Cleveland and Toledo. The Pennsylvania reaches tidewater at New York, Norfolk, and Baltimore, and extends to Cincinnati, Louisville, St. Louis, and Chicago in the west, covering, of course, the intermediate territory.

The Baltimore & Ohio likewise operates in trunk line territory, reaching tidewater at Baltimore and extending to Chicago through Pittsburgh. This road also has a terminal at St. Louis, which is reached from Cumberland, Maryland.

The Erie offers the shortest route of all trunk line carriers from New York to Chicago. While this road reaches the intermediary centers of Cleveland, Cincinnati, and Buffalo, as well as Scranton and Wilkes-Barre, it does not directly reach other large intermediate industrial centers, such as Pittsburgh, Indianapolis, and St. Louis. Therefore, it operates at a disadvantage in relation to some of the other trunk line carriers. The prospective merger of this road with the Nickel Plate, the Chesapeake & Ohio, the Pere Marquette, and the Hocking Valley would undoubtedly overcome some of the present difficulties under which the Erie now operates.²⁶

Both passenger and freight traffic density is higher, on the whole, in trunk line territory than in any other section of the country. Food and raw materials are carried eastward, while manufactured goods are carried to the west. It is over roads that operate in this territory that the most vital commerce of the country is transported.

New England lines.—To the north of trunk line territory and along the eastern seaboard are situated the New England states. Southern New England, comprising southern Massachusetts, Rhode Island, and Connecticut, is essentially different from northern New England, in that it is densely populated and highly industrialized. Except for the Boston & Albany, the only railroad system in this territory is the New York, New Haven & Hartford. This road enjoys a very heavy passenger and freight traffic. Its freight traffic consists of incoming raw materials, coal, and food stuffs, and outgoing products of New England factories. Operations of this road are characterized by short haul traffic, and diversity in freight. Northern New England is served by the Boston & Maine, which road is closely connected with the New York, New Haven & Hartford, the Central Vermont, the Maine Central, and the Bangor & Aroostook.

²⁶ Recent acquisition of the Chicago, Cincinnati & Louisville by the Chesapeake & Ohio has given the latter a Chicago terminal, thus entitling it to be classed as a "trunk line."

Southeastern territory.—The principal systems serving the area east of the Mississippi and south of trunk line territory are the Atlantic Coast Line, the Seaboard Air Line, and the Southern. The Atlantic Coast Line connects with Washington, D. C., Richmond and Norfolk, Virginia, in the north, and extends along the eastern seaboard to Charleston, Savannah, and Jacksonville on the eastern seacoast. From there it crosses the peninsula to Tampa. This road also controls the Louisville & Nashville, which spreads from Cincinnati to the Gulf of Pensacola. Divisions also reach St. Louis, Memphis, and New Orleans. The Seaboard Air Line traverses nearly the same territory as the Atlantic Coast Line proper. Its northern terminals are at Richmond and Norfolk, although it connects with Washington, Baltimore, Philadelphia, and New York over the Richmond, Fredericksburg & Potomac,²⁷ and reaches south as far as Miami and Florida City. It also has terminals at Tampa on the west coast and extends inland to Birmingham and Montgomery in Alabama. The Southern Railway lies farther inland than the other two roads in this territory. The Southern serves the territory south of the Ohio and Potomac rivers and east of the Mississippi. Every state in this area except West Virginia is traversed by the company's lines, which also reach out across Indiana and Illinois to the Mississippi River at St. Louis. With northern gateways at Washington and Cincinnati, western gateways at St. Louis and Memphis, and reaching tidewater at the ports of Norfolk, Charleston, Savannah, Brunswick, and Jacksonville on the Atlantic, and Mobile and New Orleans on the Gulf of Mexico, nearly every important community in the south is served. Through control of the Chicago, Indianapolis & Louisville Railway Company jointly with the Louisville & Nashville, entrance is had to Chicago.

Traffic of the lines operating in southern territory flows for the most part north and south. The principal products are manufactured goods and foodstuffs, which come from the Central and the North Atlantic states and from the North Central

²⁷ The stock of the Richmond, Fredericksburg & Potomac Railroad is controlled by the Richmond-Washington Company which, in turn, is owned equally by the Pennsylvania, Baltimore & Ohio, Atlantic Coast Line, Southern Railway, Chesapeake & Ohio, and Seaboard Air Line.

states. North-bound traffic consists of raw cotton, lumber, and some mineral products.

Anthracite coal roads.—The roads which carry the bulk of the country's anthracite coal north are the Delaware, Lackawanna & Western, the Reading, the Lehigh Valley, the New York, Ontario & Western, and the Delaware & Hudson. Whereas these roads run through highly industrialized territory and carry commodities other than anthracite, the latter constitutes such a large portion of total freight that they well deserve the name commonly applied.

Bituminous coal roads.—Roads whose traffic is made up largely of bituminous coal are the Norfolk & Western, the Virginian, the Carolina, Clinchfield & Ohio, and the Hocking Valley, controlled by the Chesapeake & Ohio. The last mentioned road itself carries a substantial amount of bituminous coal, although its position in the recent Nickel Plate merger warrants its classification as a trunk line road (see page 470).

South central and southwestern roads.—That group of roads which radiates from Chicago and St. Louis to the south and the southwest may now be considered. The Illinois Central runs directly from Chicago to New Orleans, but reaches the Union Pacific at Sioux City. It also has branches which extend to St. Louis, to Madison, Wisconsin, and to Indianapolis, Louisville, Shreveport, and Birmingham. Savannah, Jacksonville, and Montgomery are reached through control of the Central of Georgia. The St. Louis-San Francisco Railway extends from Kansas City and St. Louis southwesterly through Missouri, Kansas, Oklahoma, and Arkansas into Texas, with a line from Kansas City crossing the Mississippi River at Memphis and extending southeastwardly to Birmingham. Another line extends from St. Louis, through the Mississippi Valley to Memphis, where it connects with the Kansas City-Birmingham line. Lines also extend from St. Louis into the grain section of Kansas as well as into Oklahoma and Texas. This southwest network of lines reaches Wichita, Kansas; Oklahoma City, Oklahoma; and Fort Worth and Dallas, Texas. A line is at present under construction between Kimbrough, Alabama, and Aberdeen, Mississippi, which will give this road an outlet to the Gulf at Pensacola over its subsidiary, the Muscle Shoals, Birmingham & Pensacola Railroad.

There are four other roads which operate in the south-

western area, but which do not extend to the Pacific coast. The most important of these, the Chicago, Rock Island & Pacific, extends from Chicago to St. Paul, to Denver, and to Santa Rosa, New Mexico (where it connects with the Southern Pacific to form a through route to the Coast). It also extends southerly into Louisiana and southeasterly to Memphis. The St. Louis-San Francisco Railway, previously referred to, has recently acquired a controlling interest in the stock of this road.

The other three roads are the Kansas City Southern, which extends from Kansas City to Port Arthur on the Gulf; the Missouri, Kansas & Texas, which extends from Kansas City and St. Louis to Galveston, Texas; and the St. Louis Southwestern, which runs from St. Louis to Forth Worth and Comanche, Texas. These three roads make up the so-called "Loree System."²⁸ In a recent application made to the Interstate Commerce Commission (which application was denied), it was proposed that the Kansas City Southern acquire the Missouri, Kansas & Texas, which, in turn, would acquire the St. Louis Southwestern.

Next to be considered are those roads which operate in southwestern territory and which reach the Pacific Coast either directly or by means of affiliated lines. Of these roads the Atchison, Topeka & Santa Fe is preëminent. This road extends from Chicago to Kansas City and St. Joseph, Missouri. At this point the various lines diverge in a wide network covering the states of Kansas, Oklahoma and New Mexico. The main line extends to Barstow, California, at which point it separates into two lines, one extending to Los Angeles and the other to San Francisco. From Los Angeles a line runs south to San Diego, California. A line also extends from Wichita, Kansas, to the Gulf at Galveston, with branches extending to the east and west through Texas. Another line extends to Denver on the north.

The eastern terminal of the Southern Pacific is at New Orleans, whence it extends westward across Texas to El Paso,

²⁸ A substantial stock interest in all these roads is under the control of L. F. Loree.

and thence along the Mexican border to the Coast, where it has terminals at San Diego, Los Angeles, San Francisco, and Portland. This road is the dominating factor in north and south bound traffic on the Coast. A line also extends from San Francisco to Ogden, Utah, where connection with the Union Pacific is made for a through route to Chicago. The connection with the Rock Island at Santa Rosa has previously been mentioned. The Southern Pacific also operates a road down the west coast of Mexico to Guadalajara, where it makes connections for Mexico City; and operates a fleet of steamships between New Orleans and New York City.

The Missouri Pacific extends from St. Louis and Kansas City to New Orleans, Galveston, and El Paso. Another branch extends from Kansas City to Omaha, while, at Pueblo, Colorado, a junction is made with the Denver & Rio Grande Western by means of which the Rocky Mountain Region is covered. The Missouri Pacific, jointly with the Western Pacific (which extends from Salt Lake City to San Francisco), controls the Denver & Rio Grande Western, the three roads together forming a system extending from St. Louis to San Francisco.

Western and northwestern roads.—Those roads which extend from Chicago into the agricultural territory west of Chicago, but which do not reach the Coast, are known as the Grangers. The more important of these are the Chicago & Northwestern, and the Chicago, Burlington & Quincy.²⁹ The former extends from Chicago through Iowa, Nebraska, Wisconsin, Minnesota, and South Dakota. The latter extends from Chicago through the territory south of the Northwestern, but also has lines extending to Montana, through Wyoming. Another line extends north to the Twin Cities.

In contrast to these two roads, the Great Northern, the Northern Pacific, the Chicago, Milwaukee, St. Paul & Pacific, and the Union Pacific reach the Coast. The Union Pacific starts from Omaha and Kansas City, and runs to Denver, Salt Lake City, Ogden, Spokane, Portland, Tacoma and Se-

²⁹ The C., B. & Q. is jointly controlled by the Northern Pacific and the Great Northern, which roads do reach the Pacific coast.

attle. It also has a line extending from Salt Lake City to Los Angeles. At Ogden connection is made with the Southern Pacific for San Francisco.

The Great Northern and the Northern Pacific extend from St. Paul, Minneapolis, and Duluth to Portland, Tacoma, and Seattle. The Great Northern and the Northern Pacific, however, jointly control the Chicago, Burlington & Quincy, and, consequently, have direct connection with Chicago. These roads parallel each other, the Great Northern running along the Canadian border, while the Northern Pacific occupies a more southerly position. Both of these latter roads carry substantial quantities of grain and iron ore.³⁰

The sketch here given of the transportation system of the United States, while centered around the more important systems, does not include all of the larger roads, nor any of the smaller roads. It is suggested only as a starting point for the student and not as a complete picture. The specialist in railroad securities must go much farther, for the investment standing of various railroads depends on many diverse factors, including the economic development of the territory they serve, the physiography of the country they traverse, and the extent to which they connect with strategic termini.

³⁰ The student of American railway finance will do well also to familiarize himself with the Great Canadian railways—the Canadian Pacific and the Canadian National Lines—comprising the old Grand Trunk, the Grand Trunk Pacific, the Canadian Northern and the Intercolonial.

CHAPTER XIX

RAILROAD SECURITIES—ANALYSIS OF

Plan of analysis: statistical difficulties.—A series of comparisons that may be made of individual roads for the purpose of determining the investment merit of their securities will now be considered. In such a study, the general procedure to be followed is similar in many ways to that followed in connection with analyzing utility or industrial companies. A survey is first made of the road's location, the character of the territory served, its industrial development, the nature of the terrain over which the road runs, and other physical characteristics which have a direct bearing on its profit making possibilities. Subsequently, the financial structure and operating results of the road may be studied through the various reports rendered either to the Interstate Commerce Commission or to the investing public. The entire problem of railroad analysis is by no means simple, despite efforts which have been made to standardize all railroad reports for purposes of statistical comparisons. There are, after all, many elements that can never be standardized. The character and amount of traffic hauled by any given road, the extent of its mileage, its terminal connections, the nature of the terrain over which the road operates are all matters which differ widely among different companies, thus making statistical comparisons exceedingly difficult. This situation is easily pictured by a hasty comparison of two such roads as the New York Central, and the Missouri Pacific. The first road is a system operating through thickly populated territory, connecting very important termini, and enjoying diverse traffic. The second road operates in a sparsely settled area, and, while it serves many of the more important localities in its territory, it is inconceivable that it should be called upon under present conditions to handle the same amount of traffic per mile of road as the former road handles. What does this mean to the analyst? It means that very few of

the ratios of operation or capitalization can be compared for the two roads. In so important a matter as capitalization, one finds that the New York Central has nearly \$268,000 of securities outstanding per mile of road operated, whereas the Missouri Pacific is capitalized at about \$59,000 per mile. This disparity loses significance, however, when it is realized that the New York Central carries nearly three times as much freight per mile of track as the Missouri Pacific, and about eight times as many passengers per mile of track. In view of a much heavier traffic density, the former road can support a heavier capitalization.

Nor does traffic density constitute the only difference in operating conditions of various roads. It is also necessary to recall that some freight is far more profitable to a road than is other freight. For example, a large portion of freight carried by the New York, New Haven & Hartford railroad is known as high classification freight and pays a much higher rate per ton mile than do such items as coal, ore, and other bulky commodities. Each ton of freight carried on the New York, New Haven & Hartford, in 1926, yielded on the average, a gross revenue of 2.07 cents, while the Norfolk & Western, which operates in the coal district, received an average gross return of only .65 cent for each ton mile carried in that year.

These simple illustrations are given to show that great care must be used in comparing the financial structure and operating results of one road with those of another. Such comparisons, to be of value, should involve roads that are similarly situated in respect to character and amount of traffic, territory served, and length of road operated. Otherwise, serious errors in judgment are inevitable.

With these words of caution, the more important matters that must be covered in analyzing railroad securities may be considered. Attention will first be given to certain matters that have a direct bearing on the status of a road, but which are somewhat out of the control of the management. Thereafter, consideration will be given to a number of so-called ratios or units of measurement by which the operating results of roads may be compared or analyzed.

Outside factors: nature of terrain.—According to the plan just outlined the first matters to be considered are such items

as the location of a road, the curves, and especially the grades it encounters; also the character of the freight originating in the territory, as well as the volume of business that may be developed. These factors may have involved managerial problems when the road was originally constructed; but, for a line that is already built and operating, such matters are largely solved once and for all, unless capital expenditures are subsequently undertaken to eliminate grades, straighten curves, or otherwise improve the road's physical layout, or unless the territory enjoys a subsequent growth.

The matter of grades is especially important to a railroad, for the average trainload that can be hauled over any division or branch is limited by the grades encountered. Let us suppose that two roads are substantially similar in all respects, except that one encounters at certain points on its line grades as steep as 2 per cent, while the other road runs over practically level country.¹ Which of these two roads will be able to show the better operating results? Undoubtedly the latter, for each 1 per cent increase in grade may be said to cut the hauling capacity of an engine in half. For this reason, the New York Central lines, with practically a level route from New York to Chicago, have a decided advantage over the Pennsylvania and the Baltimore & Ohio roads, which cross the Allegheny Mountains. It is true that engineering skill is often employed in eliminating grades, but this adds to the road's capital investment and hence increases fixed charges. A road which naturally enjoys level territory has a permanent advantage over one which encounters grades, even though the latter is able subsequently to eliminate these grades. The matter of curvature has about the same effect on railroad operation as grades. Sharp curves cut down the average trainload and add to the cost of operation, although they present a somewhat less serious problem than do heavy grades.

Character of traffic.—Another matter which is partly out of the control of the management of a road is the type of traffic which it is offered. Here, again, the management of a particular road can, it is true, assist in the building up of industries along its lines and thus diversify to some extent the character of its traffic, yet to a large extent the kinds of freight

¹ A grade of 1 per cent may be expressed as a grade, where there is a rise of 52 feet per mile, or 1 foot per 100 feet.

offered will depend on economic conditions within the area it serves.

Roads like the Chesapeake & Ohio, the Baltimore & Ohio, and the Norfolk & Western are known as the soft coal carriers, in that they run through territory in which the mining of bituminous coal is the leading industry. The bulk of their traffic, therefore, consists of bituminous coal. Other roads, like the Reading, the Delaware, Lackawanna & Western, the Lehigh Valley, and the Delaware & Hudson, are known as the hard coal carriers. The Northwest roads, such as the Chicago, Milwaukee & St. Paul, the Northern Pacific, and the Great Northern are frequently spoken of as the grain roads, although a study of their freight statistics fails to show that an abnormally large part of their traffic consists of products of agriculture.

The Interstate Commerce Commission requires that records, showing the percentage of the total traffic carried under each of the following groups, be kept for each road:

1. Products of Agriculture.
2. Products of Animals.
3. Products of Mines.
4. Products of Forests.
5. Manufactures and Miscellaneous.
6. Merchandise (less than carload lots).

The following table, which is given for illustrative purposes, contains a three-year analysis of the distribution of traffic of the Delaware & Hudson and the New York, New Haven & Hartford Roads:

ANALYSIS OF TRAFFIC, 1924 TO 1926, INCLUSIVE, OF
DELAWARE & HUDSON, AND NEW YORK, NEW HAVEN & HARTFORD

<i>Products of</i>	<i>Delaware & Hudson, Year Ended</i>			<i>New York, New Haven & Hartford, Year Ended</i>		
	1924	1925	1926	1924	1925	1926
Agriculture	4.3%	4.7%	4.5%	10.3%	9.9%	9.5%
Animals .....	.7	.7	.6	2.7	2.6	2.6
Mines	69.7	64.6	69.0	32.7	31.9	35.0
Forests	5.3	6.0	5.3	6.5	6.1	5.3
Manufactures ...	17.8	21.3	18.3	39.4	40.8	39.4
Merchandise	2.2	2.7	2.3	8.4	8.7	8.2
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

It is interesting to note in detail the difference in traffic carried by these two roads. As already suggested, the Delaware & Hudson is commonly known as one of the coal roads. This is clearly in evidence when traffic statistics are analyzed. In fact, between 65 and 70 per cent of the entire traffic of this road is made up of "products of mines." The New York, New Haven & Hartford, in contrast, enjoys diversity in its freight. Manufactures and merchandise make up the bulk of this road's traffic, and here are included a wide range of commodities, mostly known as high classification freight. From the standpoint of traffic carried, the New York, New Haven & Hartford appears to be better situated than the Delaware & Hudson.

Dangers of concentrated traffic.—It is of course desirable that a road should have a fairly diversified traffic and that the major sources of traffic be permanent. To illustrate the disadvantages of concentrated traffic to a road, one has but to consider the effect of the coal strike in 1925 on the revenues of the Delaware & Hudson. As just noted, anthracite coal makes up the major share of this road's traffic. Revenues derived from coal traffic in 1925 were \$17,772,850, as contrasted with coal revenues of \$22,308,428 in 1924. Total operating revenues declined from \$45,012,988, in 1924, to \$41,769,491, in 1925, whereas net income available for dividends declined from \$5,817,376 to \$4,907,708. This decline in gross operating revenues and net income is all the more significant, when it is realized that railroad operations in other parts of the country were particularly successful in 1925. As a matter of fact, combined net operating income for all Class I railroads in the country reached a higher figure in 1925 than in any other year since 1915, and was \$1,121,077,000 as contrasted with \$973,837,000 in 1924. Furthermore, the coal strike did not commence until September, 1925, and the full effect was not felt at once. A protracted strike in the anthracite coal fields would undoubtedly have a serious effect on the revenues of all the hard coal carriers. In like fashion, any depression in the hard coal industry is reflected in the earnings of these roads.

The case of the old Pere Marquette is another example frequently cited to show the dangers that may result from poorly diversified traffic. This road was originally built to

serve the rich timber lands of Michigan. For a time all went well; but, as the lumber was cut off, traffic dwindled and earnings declined. The inevitable result was receivership and reorganization. In fact, two reorganizations were necessary in this case before the road finally emerged as a going concern. The growth of other industries in the territory which the Pere Marquette serves has, during recent years, improved its situation substantially. At the present time, the road's traffic shows a satisfactory diversity, products of forests constituting slightly over 6 per cent of total revenue tonnage.²

The business of a railroad is different from that of a factory, in that its plant and equipment are definitely committed to the one business of furnishing transportation services. If the road's business centers largely on the transportation of only one article, and if the demand for, or source of supply of, that article falls off, the road is helpless. It cannot change its machinery over to the manufacture of another commodity, as in the case of many manufacturing plants; nor can it distribute its product to other localities, as in the case of many electric plants which enjoy super-power hook-ups.

Diversified traffic.—Roads which have diversified traffic are affected in other respects. The Lehigh Valley, the Delaware & Hudson, and other coal carrying lines are hampered by the fact that much of their traffic moves only one way. All of these roads are required to have special equipment for hauling coal, yet the coal moves one way only. On the other hand, empty cars have to be hauled back to the mines, and this hauling involves a cost with no corresponding return. It might also be added that roads with highly concentrated traffic suffer from seasonal depressions and periods of peak movements. In order to meet the heavy movement of traffic at certain times

2 CLASSIFICATION OF REVENUE FREIGHT TONNAGE
PERE MARQUETTE, 1926

	<i>Per Cent</i>
Products of Agriculture.....	9.54
Products of Animals.....	1.10
Products of Mines.....	52.74
Products of Forests.....	6.28
Manufactures and Miscellaneous.....	30.34

100.00

of the year, it is necessary to have facilities which lie idle during other months. Diversified traffic results in a more even distribution of business throughout the year.

Traffic density.—The next matter to consider in analyzing railroad securities is that of *traffic density*. A road's traffic is customarily divided into two major groups—freight and passenger. The *freight density* of a road may be found by dividing the number of tons of freight carried one mile by the number of miles of road operated. *Passenger density* is likewise obtained by dividing the number of passengers carried one mile by the number of miles of track operated. By so comparing the amount of freight or the number of passengers carried, in terms of the ton mile, or the passenger mile unit, with the number of miles of track operated, we have a ratio which indicates the extent to which the facilities of one road are used as compared with those of another road. In this connection let us consider the average freight and passenger density of three roads³—the New York Central, the Chicago, Milwaukee & St. Paul, and the Missouri Pacific.

AVERAGE TRAFFIC DENSITY OF SELECTED ROADS

Road	TRAFFIC DENSITY, TEN-YEAR AVERAGE (1917-1926)	
	Freight	Passenger
New York Central.....	3,493,989	543,718
Chicago, Milwaukee & St. Paul.....	1,024,680	78,662
Missouri Pacific *	1,071,764	81,927

*Nine-year average, 1918-1926.

During the past ten years the New York Central lines averaged to carry $3\frac{1}{2}$ times as much freight as did either of the other two lines for every mile of track operated, while it did over six times as much passenger business per mile of track operated. This does not mean that the New York Central carried $3\frac{1}{2}$ times as much freight as either of the other two roads, but it does mean that it carried *for each mile of track operated* $3\frac{1}{2}$ times as many ton miles of freight.

³ Moody's "Manual of Investments," "Railroad Securities," 1927, pp. 947, 1083, 1142.

Traffic density depends in a measure on the territory which a railroad serves, its termini, and its connections with other railroads. Roads which traverse densely populated areas, or which connect important cities, will have a heavier traffic density than roads which serve thinly populated areas. It is also important that a road be situated so as to serve one or more important terminal cities. A road which connects Chicago with the Gulf, with Mississippi or Missouri river points, or with Pacific or Atlantic cities has an excellent opportunity to make arrangements with other roads for reshipment of traffic over long distances. A road which merely serves an outlying area and acts largely as a feeder for other lines is at a disadvantage in this respect. Such a road is restricted to traffic that originates or is consumed in its own area. The business of handling through shipments is possible only for roads which connect important cities. If the student will refer to a railroad map and note the areas and the important cities served by the five roads making up the proposed new Nickel Plate merger, he will note that the merged system, as proposed, will acquire through connections between St. Louis and Peoria at the western extremity, and Washington, Newport News, Baltimore, Philadelphia, and New York at the eastern extremity.⁴ Such a system will rival in strength the New York Central, the Pennsylvania System or the Baltimore & Ohio. Furthermore, the Pere Marquette, which now has no Atlantic seaboard terminal, will become an integral part of the system and, from a geographical standpoint, will be greatly strengthened. The Erie, on the other hand, will be further strengthened by having additional sources of east bound traffic at Chicago through its association with the Chesapeake & Ohio and the New York, Chicago & St. Louis. In other words, the combined results of the system should be in excess of the combined results of the present roads operating independently.

⁴ The New York, Chicago & St. Louis now serves, among other important cities, St. Louis, Peoria, Chicago, Toledo, Detroit, and Buffalo. The Pere Marquette serves Detroit, Lansing, Grand Rapids, and Port Huron. The Chesapeake & Ohio serves Chicago, Cincinnati, Louisville, Newport News, Washington, Baltimore, Philadelphia, and New York, and is connected with Toledo by the Hocking Valley. The Erie connects Chicago, Cincinnati, Cleveland, Buffalo, and New York.

The roads that offer the greatest opportunities for speculative profits at the present time are those roads serving rapidly growing areas. Such roads as the Southern Railway, Missouri-Kansas-Texas, and Missouri Pacific have recently shown large increases in traffic and revenues partly on account of the growth that has taken place in the territories served. Other southwestern roads, such as the Atchison, Topeka & Santa Fe, ought to show future increases in density and revenues. The New York Central, the Pennsylvania, and the New York, New Haven & Hartford serve areas where a normal expansion in traffic may be expected, it is true; but the opportunities for speculative profits are limited by the fact that such roads are rapidly reaching the point of increasing costs. That is, any substantial amount of additional traffic which these roads may be called on to carry will require additional facilities and hence add to capital investment and fixed charges. Roads which at present have a low traffic density are in a position to take on additional business with no substantial increases in plant and with a less-than-proportional increase in operating expenses.

Revenues per ton mile of traffic carried.—In connection with traffic density it is also important that one consider the nature of traffic handled. The mere fact that one road has a traffic density of two times another road is not especially significant, as the former road may have a relatively large amount of low grade freight. The character of business handled determines the relative profitableness of the road's traffic density, so to speak. For example, the freight density of the Lehigh Valley in 1926 was 4,236,513. That is, over 4,000,000 ton miles of freight were hauled per mile of track. The average rate per ton mile, however, was only 1.15 cents. The New York, New Haven & Hartford had a freight density in 1926 of 1,736,591, less than one half that of the Lehigh Valley, yet it averaged to earn 2.07 cents per ton mile, or nearly double that of the former road. On this account the New York, New Haven & Hartford was able to show, in 1926, gross freight revenue per mile of track of \$36,210 as compared to \$48,230 for the Lehigh Valley. In other words, with a freight density of only 41 per cent of that of the Lehigh, the New York, New Haven & Hartford was able to derive from its freight business 75 per cent as much revenue per mile of track as did the former road. The following table

presents an interesting comparison of the ton-mile earnings of selected roads:⁵

CHARACTER OF TRAFFIC, TON MILE EARNINGS,* AND OPERATING RATIOS

(Selected Roads, 1926)

<i>Freight Classification</i>	<i>Delaware & Hudson</i>	<i>N. Y. Central</i>	<i>Atchison</i>	<i>N. Y., N. H. & H.</i>	<i>Norfolk & Western</i>
Products of Agriculture	4.48%	6.42%	20.26%	9.50%	2.19%
Products of Animals....	.60	2.21	3.30	2.60	.32
Products of Mines	69.10	58.12	39.49	35.00	84.61
Products of Forests.....	5.29	3.57	6.46	5.30	3.73
Manufactures and Misc.	20.53	29.68	30.49	47.61	9.15
<hr/>					
* Average Revenue per Ton-mile in cents.....	1.062	1.051	1.203	2.071	.65

Note the extent to which earnings vary with the class of freight that is handled. The Norfolk & Western has the lowest rate of earnings, the highest per cent of freight represented by products of mines, and the lowest under the manufactures and miscellaneous group. New York, New Haven & Hartford has the highest rate of earnings, the lowest per cent classed as "products of mines," and the highest classed as "manufactures and miscellaneous."

Passenger versus Freight Traffic.—If one looks at the composite operating results of all Class I roads in this country, he will note that freight business contributes more than any other single item to total revenues. In other words, the freight end of the railroad business is considerably more important than the passenger end. The best proof of this lies in an examination of the combined income account of all Class I roads, shown in the following table:⁶

COMPARISON OF TOTAL REVENUES, FREIGHT AND PASSENGER REVENUES

(Class I Roads, 1922-1926, in \$1,000's)

<i>Item</i>	<i>1922</i>	<i>1923</i>	<i>1924</i>	<i>1925</i>	<i>1926</i>
Total Revenues .	\$5,559,093	\$6,289,589	\$5,921,496	\$6,122,510	\$6,380,092
Freight	3,992,441	4,606,720	4,333,585	4,541,646	4,807,045
Passenger	1,074,108	1,145,699	1,075,039	1,056,395	1,042,950

⁵ "Standard Statistics," Standard Corporation Records.

⁶ "U. S. Statistical Abstract," 1926, p. 391.

On the other hand, there are certain roads, such as the New York, New Haven & Hartford and the Long Island, where passenger revenues are nearly as large or larger than freight revenues. In the case of the Long Island Railroad, almost all of whose stock is owned by the Pennsylvania Railroad, passenger revenues consistently amount to over twice freight revenues. The passenger density of this road is the highest of any road in this country known to the author.⁷ These roads, however, are the exception, not the rule. Nevertheless, the passenger business of a road is generally highly important to successful operation and should be closely watched. Railroads operate under conditions of increasing returns, and a falling off in passenger revenues, even though only a small part of the road's total revenue is derived from its passenger business, may prove serious. Small as such revenues are in some cases, they may provide the margin necessary to pay fixed charges and show profits. A case in point is the history of the Chicago, Milwaukee & St. Paul, which recently went into the hands of receivers. It may be true that this road was overcapitalized on the basis of its normal business, yet, until its passenger density started to decline after 1920, it had been able at least to earn its charges. From 1920 on, however, a rapid decline took place in passenger density at a time when there was no substantial increase in freight density. Operating results, therefore, were less and less satisfactory during a period when most roads of the country were showing a substantial improvement. The table on the following page brings out these tendencies clearly.

⁷ Moody's "Manual of Investment," "Railroad Securities," 1927, pp. 1266, 1267.

GROSS REVENUES, REVENUES DERIVED FROM FREIGHT AND
PASSENGER TRAFFIC AND PASSENGER DENSITY

(Long Island Railroad, 1922 to 1926, in \$1,000's)

Item	1926	1925	1924	1923	1922
Total Revenues	\$39,649	\$36,869	\$35,078	\$34,085	\$30,952
Passenger Revenues . .	25,274	24,163	22,111	20,704	19,224
Freight Revenues ..	11,661	10,603	10,169	10,486	8,916
Passenger Density...	4,554,317	3,962,067	3,625,275	3,376,918	3,120,306

PASSENGER AND FREIGHT DENSITY AND OPERATING RESULTS,
CHICAGO, MILWAUKEE, & ST. PAUL

(1920 to 1925, Inclusive)

<i>Year</i>	<i>Freight Density</i>	<i>Passenger Density</i>	<i>Operating Ratio</i>	<i>Times Charges Earned</i>
1920	1,071,629	98,885	97.94	.77 (def.)
1921	766,352	75,605	87.18	.42
1922	961,174	74,089	82.57	.68
1923	1,082,783	71,560	79.59	1.02
1924	1,001,624	64,677	79.28	.92
1925	1,067,991	64,173	80.51	.80

Even though the road was able to reduce its operating ratio substantially during the period, it was unable to show earnings much more than charges for any of the years under consideration. Had the passenger business of the road not declined by so large a percentage, it is possible that receivership proceedings would have been delayed if not entirely avoided.

During the past five years there has been a country wide tendency for passenger business to decline, while freight revenues, on the whole, have increased. This movement is indicated in the data appearing on page 485, and may be further verified by statistics of passenger miles and freight miles of service rendered by Class I railroads for recent years.⁸

FREIGHT TON MILES AND PASSENGER TON MILES, AND AVERAGE
TRAFFIC DENSITY

(Class I Roads, 1921-1926, Inclusive)

<i>Year</i>	<i>Miles of First Track</i>	<i>Revenue Freight Ton Miles (1,000,000's)</i>	<i>Average Freight Density</i>	<i>Passenger Miles (1,000,000's)</i>	<i>Average Passenger Density</i>
1921	234,702	306,840	1,308,938	37,313	159,000
1922	234,976	339,285	1,444,840	35,470	150,900
1923	235,574	412,727	1,754,901	37,957	161,100
1924	235,894	388,415	1,649,318	36,091	153,000
1925	236,849	413,814	1,749,147	35,950	151,800
1926 .....	.....	444,038	1,884,616	35,487	.....

The decline in passengers carried and passenger density may be partially accounted for by the increasing use of automobiles and buses. Truck transportation has undoubtedly taken away

⁸ Data taken from "U. S. Statistical Abstract," 1926, pp. 377 to 389. The student will find it interesting to work out similar statistics for each of the three classification districts: Eastern, Southern, and Western. Sufficient data are available for this at the above reference.

some freight traffic from the railroads, especially in congested areas where short hauls predominate; but where the average haul is long, transportation by rail has so far proved more economical than by truck. In view of the preceding tendencies, it is essential to study carefully the manner in which individual roads have fared in respect to passenger and freight traffic increases or decreases and to consider their future prospects under changed conditions.

Length of mileage.—The length of mileage operated by a road is another general factor to be considered. As a rule, roads with long mileage enjoy diverse traffic and long hauls. Long hauls are often more profitable to a road than short hauls, because handling and terminal costs are proportionately less. Regardless of the length of haul, only one set of terminal costs is necessary. For these reasons it rarely happens that a road or system operating less than 1,000 miles is profitable. The exceptions are those roads that operate through very densely populated areas or which connect important termini.

The presence of extra main line trackage likewise indicates a better utilization of the system. It has been estimated by railroad engineers that the carrying capacity of a railroad is increased from $2\frac{1}{2}$ to 5 times by double tracking. The presence of double tracks increases the rate of speed at which trains may be run, eliminates the delays frequently incurred where trains meet at turnouts, and makes possible much greater efficiency in train operation.

Specific tests of operating efficiency; analysis of financial statements.—Analysis of the second group of factors that must be considered in studying railroad securities, factors over which the management has a direct control, require contact with the financial statements issued by the separate roads. In contrast to the wide differences found in the accounting practices of industrial and public utility corporations, one finds a pleasing uniformity in railroad accounts. All roads engaged in interstate commerce are required to keep their accounts on forms prescribed by the Interstate Commerce Commission, and all items must be handled in a uniform manner. It is of distinct value to the analyst to know that such items as maintenance, additions and betterments, depreciation, and repairs are always handled in exactly the same manner, irrespective of the road he is studying. Furthermore, the completeness with

which information is given enables a much more valuable comparison to be made of various roads than would otherwise be possible.

The income account.—The basic form of income account now prescribed by the Commission follows:

STANDARD FORM OF INCOME ACCOUNT FOR RAILROADS

Section	I.—Operating Revenues
	Freight revenues
	Passenger revenues
	Other transportation revenue (including mail, express, etc.)
	Nontransportation revenue
	Total operating revenue
Section	II.—Operating Expenses
	Maintenance of way and structures
	Maintenance of equipment
	Traffic expenses
	Transportation expenses
	General and Miscellaneous expenses
	Transportation for investment credit
	Less total operating expenses
Section	III.—Net Operating Revenues
	Less railway tax accruals
	Uncollectible railway revenues
Section	IV.—Operating Income
	Add
	Rent from locomotives
	Hire of freight cars (credit)
	Rent from passenger train cars
	Rent from joint facilities
	Other income
Section	V.—Total Operating Income
	Deduct
	Hire of freight cars (debit)
	Rent for locomotives
	Rent for passenger cars
	Rent for joint facilities
	Rent for other equipment

Section VI.—Net Railway Operating Income

Add nonoperating income
Dividends received
Income from funded securities
Income from unfunded securities and accounts
Rents received
Miscellaneous income

Section VII.—Gross Income

Deduct
Interest on funded debt
Interest on unfunded debt
Rents for leased roads
Miscellaneous rents
Miscellaneous charges

Section VIII.—Net Income

Deduct
Dividends paid
Special appropriations
Profit or loss for the year

The income account of the Wabash Railway Company for the fiscal year ended December 31, 1925, is given below for illustrative purposes.⁹ It will be noted that this account follows very closely the standard form shown above for discussion purposes.

WABASH RAILWAY COMPANY INCOME ACCOUNT

(Year ended December 31, 1925)

OPERATING REVENUES	
	1925
Freight	\$55,329,533.48
Passenger	9,364,485.87
Mail	821,242.85
Express	1,849,683.77
Miscellaneous	2,545,355.02
Total	<u>\$69,910,300.99</u>

⁹ The complete annual report may be found in the *Chronicle*, Vol. 122, p. 2515 (May 1, 1926).

OPERATING EXPENSES

Accounts—	1925
Maintenance of Way and Structure.....	\$ 9,311,985.39
Maintenance of Equipment.....	12,348,290.72
Traffic	1,816,543.44
Transportation—Rail Line	25,431,803.96
Miscellaneous Operations	387,660.58
General	1,948,563.75
Transportation for Investment—Credit.....	164,424.02
Total Operating Expense.....	<u>\$51,080,423.82</u>
Net Operating Revenue.....	<u>\$18,829,877.17</u>
Railway Tax Accruals.....	\$ 3,287,579.67
Uncollectible Railway Revenues.....	7,069.40
Total	<u>\$ 3,294,649.07</u>
Operating Income	<u>\$15,535,228.10</u>
Other Operating Income—	
Rent from Locomotives.....	\$ 56,185.56
Rent from Passenger-Train Cars.....	44,950.66
Rent from Floating Equipment.....	24,912.10
Rent from Work Equipment.....	16,385.17
Joint Facility Rents.....	289,311.36
Total	<u>\$ 431,744.85</u>
Total Operating Income.....	<u>\$15,966,972.95</u>
Deductions from Operating Income	
Hire of Freight Cars—Debit Balance.....	\$ 1,881,230.18
Rent for Locomotives.....	30,933.37
Rent for Passenger-Train Cars.....	72,311.35
Rent for Floating Equipment.....	15,881.72
Rent for Work Equipment.....	40,750.76
Joint Facility Rents.....	1,673,350.08
Total	<u>\$ 3,714,457.46</u>
Net Operating Income, Section 422 Transportation Act 1920	<u>\$12,252,515.49</u>
Nonoperating Income	
Income from Lease of Road.....	\$ 20,575.47
Miscellaneous Rent Income.....	157,192.74
Miscellaneous Nonoperating Physical Property.....	35,288.57
Dividend Income	77,704.00
Income from Funded Securities.....	33,221.95
Income from Unfunded Securities and Accounts....	444,680.12
Income from Sinking and other Reserve Funds....	212.50
Miscellaneous Income	1,231.67
Total	<u>\$ 770,107.02</u>
Gross Income	<u>\$13,022,622.51</u>

Deductions from Gross Income	1925
Rent for Leased Roads.....	\$ 361,704.21
Miscellaneous Rents	23,909.22
Miscellaneous Tax Accruals.....	25,866.12
Interest on Funded Debt.....	4,587,596.15
Interest on Unfunded Debt.....	23,558.57
Amortization of Discount on Funded Debt.....	50,345.28
Miscellaneous Income Charges	3,205.00
Total	\$ 5,076,184.55
Net Income	\$ 7,946,437.96

The various sections of this report may now be considered in greater detail. Section I does not require elaborate explanation. In this part of the report is shown the total operating revenue of the road as derived from operating trains over its mileage. Nonoperating income is excluded from this section. Obviously the greater part of the operating revenues of a road will be derived from its freight and passenger business. The average figures for the United States as a whole show that from 65 to 70 per cent of all operating income is derived from handling freight. Passenger revenues are next in importance, while revenues derived from mail, express, and so forth, constitute only a relatively small part of total operating revenues.¹⁰

Operating revenues per mile of track.—An excellent test of the traffic density of a road in terms of earnings may be found by dividing operating revenues by miles of track operated. This study may be further refined, if desired, by ascertaining freight revenues or passenger revenues per mile of track for comparative purposes. "Revenues per mile of track" is a better measure of the amount of traffic carried by a road than either freight density or passenger density as previously defined (see page 482). Revenues per mile of track give weight not only to the amount of traffic per mile of track, but to the profitableness of this traffic as well.

It is interesting to note the extent to which revenues per mile of track vary as between different sections of the country. The following table ¹¹ shows the combined results for selected

¹⁰ See tables on p. 485.

¹¹ Based on data from "U. S. Statistical Abstract," 1926, pp. 392, 393.

roads operating in different geographical divisions of the country for the year 1926:

TABLE SHOWING AGGREGATE OPERATING REVENUES, MILES OF TRACK OPERATED, REVENUES PER MILE OF TRACK, AND OPERATING RATIOS

(Selected Roads, 1926)

<i>Region</i>	<i>Miles of Road Operated Dec. 31, 1926</i>	1926		
		<i>Operating Revenues (\$1,000's)</i>	<i>Operating Revenues per Mile of Track</i>	<i>Operating Ratios</i>
New England	7,340	\$ 275,946	37,600	75.0
Great Lakes	24,896	1,170,692	47,000	73.9
Central Eastern	27,092	1,496,640	55,200	75.4
Pocahontas	5,555	291,064	52,400	63.2
Southern	39,174	876,162	22,300	73.9
Northwestern	48,481	728,126	15,000	73.9
Central Western	52,102	1,043,972	20,000	69.4
Southwestern	32,464	565,965	17,400	74.2
All Regions	<u>237,104</u>	<u>\$6,448,567</u>	<u>27,200</u>	<u>73.1</u>

One of the difficulties found in analyzing railroad securities is the fact that no one ratio taken by itself is significant. So it is with "revenues per mile of track." Until we know the operating ratio of the road and its capitalization "per mile" of track, it is impossible to derive any very intelligent deductions from "per mile" revenue statistics. If one road requires 80 per cent of its operating revenues to meet operating expenses, while another requires only 65 per cent, it is at once obvious that each dollar of operating revenue received is more valuable to the second road than to the first. In similar fashion, it is important to know the "per mile" capitalization of the two roads. If high "per mile revenues" are accompanied by a high "per mile capitalization," the advantages of heavy traffic may be nullified.¹² It is, in fact, impossible to center one's attention on any one statistical measurement in analyzing railroad securities. On the other hand, it is necessary to consider the whole range of data available and then to form as reasonable and intelligent a judgment as possible.

¹² For further consideration of capitalization per mile of track and its effect on railroad securities see p. 507.

Operating and maintenance ratios.—The operating ratio of a railroad is found by dividing its *total operating expenses* by its *total operating revenues*. The resulting figure indicates the percentage of gross revenues required in the operation of the business. While it is true that the operating ratio of a road gives a general picture of the road's efficiency, it is not in itself complete. The truth of this statement becomes apparent as one examines more closely the significance of the various items contained under Section II of the Income Account. Let us, therefore, analyze in some detail each of the Subdivisions found under the heading "Operating Expenses." The item "Maintenance of way and structures" includes all items of expense incurred in repairing and renewing the railroad's track, roadbed, bridges, tunnels, stations, docks and buildings, signals interlocking devices, power plants, and transmission lines, as well as write-offs for depreciation on these items. In other words, the expenses segregated under this item cover all outlays incurred in maintaining the so-called *way and structures* of the road in a proper state of repair, as well as such depreciation in values as occurs thereon through ordinary wear and tear, age, and obsolescence.

"Maintenance of equipment" includes items of expense incurred in repairing and renewing the rolling stock of the road; that is, its cars, locomotives, car shops, shop machinery, and the like. It also includes write-offs for depreciation on these assets. In this way the assets of the road are divided into nonmovable (way and structures) and movable (rolling stock and assets associated therewith).

"Traffic expenses" includes all costs incurred in procuring business for the railroad. They may be compared with the selling expenses of an industrial plant. The traffic manager of a railroad is really its sales manager. It is he who is responsible for getting business. Included under traffic expenses, therefore, we find expenses and salaries of traffic managers, freight solicitors, advertising, industrial, and immigration bureaus, and the like.

"Transportation expenses"¹³ includes all expenses incurred in moving trains. To this account are charged the wages of station employees, flagmen, yardmen, clerks, watchmen, engineers, and trainmen, the cost of dispatching trains, fuel and

¹³ This item is sometimes called "Transportation Rail-line."

supplies for locomotives, expenses for water supply, the operation of joint yards and terminals, and telegraph and station service expenses. In short, all costs of train movement are included in this subdivision of the Income Account. "Transportation water line," as the term implies, includes similar expenses involved in the operation of such vessels as the railroad owns, and terminals and docks used therewith.

"Miscellaneous operations" includes expenses incurred in the operation of dining cars and restaurants, grain elevators, stockyards, and in the furnishing of other special services that are collateral to the main business of the road.

Under the heading "General Expenses" are grouped the salaries of the general officers of the road, and their office expenses, including clerks, attendants, office supplies, stationery, legal expenses, pensions to old employees, and other so-called indirect expenses. "Transportation for investment credit" is set up to absorb all expenses connected with the movement of company materials, transportation of company officials using passes, and other costs involved in transporting materials or persons incurred in connection with construction. This account is then deducted from total operating expenses, in order that total railway operating expenses will represent only the movement of revenue traffic. This item must be treated, therefore, as a bookkeeping or adjustment item and not as an addition to other expenses, in arriving at total operating expenses.

The first conclusion generally drawn from a comparison of the operating ratios of two roads is that the road with the lower ratio is the more efficiently operated, and, therefore, should be considered the better medium of investment, other things being equal. This assumption is not entirely true, however, for the reason that certain of the various items making up operating expenses have a different effect on the investment status of the road's securities than do other expense items. Let us consider in this connection the amount spent for maintenance, which is largely discretionary. The average amount now spent by all roads in the United States for maintenance is about 33 per cent of operating revenues. If, however, a given road spends more on maintenance items than another road, it may mean that its physical assets are being kept in a better state of repair. In fact, it is perfectly pos-

sible for a road to go so far in maintenance expenditure that in substance it actually increases the capital value of its assets. Yet, so long as such expenditures are charged to income and not to capital accounts, the result is an increase in operating ratios. One may naturally ask, "Does this policy truly register inefficiency?" On the other hand, another road, by neglecting its way and structures and equipment, may show much lower operating expenses and a lower operating ratio. Again, it may be asked, "Is the second road more efficiently operated than the first?" A mere examination of the operating ratio of a railroad fails to give a complete picture of its operating efficiency.

It is possible to illustrate this entire situation by means of two hypothetical examples. Let us consider that Roads A and B are similar in respect to territory served, the nature of traffic density, and operate about the same amount of gross mileage. The percentages¹⁴ of total operating revenue consumed by the various classes of operating expenses for both roads are as follows:

A		B	
Per Cent of Operating Revenue Con-		Per Cent of Operating Revenue Con-	
sumed by:		sumed by:	
Maintenance of Way and Structures	13	Maintenance of Way and Structures	10
Maintenance of Equipment.....	20	Maintenance of Equipment.....	14
Transportation Rail and Water.....	35	Transportation, Rail and Water.....	40
Traffic and General.....	6	Traffic and General.....	7
	—		—
Total Operating Expenses.....	74	Total Operating Expenses.....	71

In the above illustration Road A's operating ratio is higher than that of Road B, yet a closer examination shows that Road A is putting a much larger percentage of its operating revenues back into its properties than is Road B and is actually conducting its real business, *that of furnishing transportation*, in a somewhat more efficient manner than Road B. This is indicated by its *transportation ratio*, as the ratio of transportation expense to operating revenue is called. Thus,

¹⁴ The ratios given here for Road A approximate to the average for all roads of the United States for 1926. See "U. S. Statistical Abstract," 1926, p. 391, for original data.

if one seeks an indication of the operating efficiency of one road as compared with another, he should go farther than a mere comparison of operating ratios. A far better index of the operating efficiency of a road is the ratio of "General transportation, and traffic expenses" to "Operating revenues." This ratio is the most important single item available for measuring both the efficiency with which a road is operated, and its profit making possibilities. In a way this item actually reflects all other matters of efficiency, since everything accomplished in the way of economical operation sooner or later has its effect in raising or lowering the so-called "transportation ratio" of the road.

Again, it is necessary to add a word of caution. In comparing the "transportation ratios" of various roads it is also necessary to consider the relationship which exists between classes of freight and gross revenues. The fact that certain kinds of freight are more remunerative than others cannot be overlooked in comparing transportation ratios, although it by no means follows that roads with a predominance of low paying freight always have high operating ratios. The added services which must sometimes be rendered in connection with high class freight traffic may offset the higher rate received thereon. Looked at in another way, low grade freight, carried in large trainloads, with no additional service, may prove as profitable in terms of "net revenues" as the higher class freight. Again, the most valid comparisons are between roads that are similarly situated and which move essentially the same kinds of traffic.

Analysis of maintenance expenses: equipment.—The grouping of operating expenses into various subdivisions makes it possible for the investor to develop several tests of the policies of a road in respect to maintenance of both equipment and ways and structures. Some indication of the liberality of a road in respect to its maintenance of equipment may be had by dividing maintenance of equipment expenses by gross revenues. This will show the percentage of gross revenues devoted to the maintaining of equipment, but is not the most accurate test in respect to this item. It is possible to go somewhat farther and reduce maintenance of equipment expenses to a "per mile of road" basis. Even this basis of comparison is open to the fundamental objection that no ac-

count is taken of the number of engines one road has as compared with another. If Road A has twice as many engines per 1,000 miles of track as Road B, the first road obviously should spend more to maintain equipment than the second. It is more accurate, therefore, to reduce "maintenance of equipment" to a "train mile" basis. The results of such a comparison are far more satisfactory than the "per mile of track" method, even though it fails to take account of the various types of equipment a road operates.

The most accurate analysis of equipment expenses requires that the amount of maintenance charged to each type of equipment—locomotives, passenger cars, and freight cars—be divided by the number of "locomotive" or "car miles" registered by each class of equipment. While this gives very accurate and comparable data on the maintenance policies of a given road in respect to equipment, the average investor is rarely in a position to obtain all the necessary data to make these computations. In some instances, the annual reports of the road furnish these ratios. In other cases, it is necessary to consult the reports on file with the Interstate Commerce Commission in Washington. For this reason the investor, as a practical matter, is forced to rely largely on the ratio of maintenance of equipment to gross revenues, or maintenance of equipment per train mile. For illustrative purposes these ratios are shown for four of the leading northwest roads for the year 1926.¹⁵

COMPARISON OF MAINTENANCE OF EQUIPMENT EXPENDITURES
(Four Northwest Carriers, 1926)

	<i>Gross Revenues in \$1,000's</i>	<i>% Maintenance Maint. of Equip. to Gross Equip. Revenues Per Train Mile</i>	
		<i>Maint. of Equip. in \$1,000's</i>	<i>Per Train Mile</i>
Chicago, Milwaukee & St. Paul..	160,538	36,458	22.7
Chicago & Northwestern.....	154,336	31,917	20.7
Great Northern	117,384	17,857	15.2
Northern Pacific	97,351	17,415	17.9

* Unavailable.

A further test of the actual physical equipment of a road, quite independent of the amount expended on its maintenance, is found in the percentage of bad order cars and bad order

¹⁵ Data taken from "Standard Statistics," Standard Corporation Records.

locomotives to the total "on line." In the previous chapter we referred to the semi-monthly report of the American Railway Association dealing with freight cars and locomotives awaiting repairs (see page 467). This report, among other data, gives, for a number of the larger roads (those with over \$25,000,000 annual operating revenues), the per cent of un-serviceable locomotives to total locomotives "on line," and similar data for freight cars. A road is generally considered as standard which has not more than 5 per cent of its cars and not more than 15 per cent of its locomotives in bad order. Thus is a check provided on the current maintenance charges. If maintenance appears normal on the basis suggested, as compared to other roads, and if bad order cars and locomotives are not proportionately high, then the presumption is in favor of the road. Otherwise, there is at least *prima facie* evidence that proper maintenance is not allowed for upkeep of the road's rolling stock.

Analysis of maintenance expenses: way and structure.—The "maintenance of way and structure" item and various methods by which this may be analyzed for comparative purposes are next to be considered. The most obvious ratio for comparing the "Maintenance of way and structure" expenses of one road with another is to determine the per cent of operating revenues allocated to this account by each road. A somewhat more significant ratio may be obtained for comparative purposes, however, if maintenance of way and structure expenses are reduced to a "per mile" basis by dividing such expenses by the number of miles of track operated. This ratio again must be interpreted in the light of the traffic density of the road. Of course it would not be accurate to compare the "per mile" maintenance expenditures of a road with a freight density of 1,000,000 with similar data for a road with a traffic density of 3,000,000, for the wear and tear on the latter road would be substantially greater than on the former. When comparing the "maintenance of way" expenses on a "per mile of track" basis for two roads, therefore, it is necessary to consider rather carefully the relative amounts of traffic carried by each. For this reason such comparisons are most significant if one first divides the roads to be studied into groups showing approximately the same traffic density and then ascertains the amounts expended over a period of years for maintenance

of way and structure on each road within the group. It is also possible to set up standard figures for each group to which individual roads in the group may be compared.

In actual practice, a further refinement is applied in comparing maintenance expenditures. It is at once apparent that the amount required to maintain a four track road is not twice that required to maintain a two track road of similar length, nor four times that required to maintain a single track. A unit known as "miles of track equivalent" is, therefore, computed somewhat as follows. If one assumes that each extra mile of main track can be maintained at a cost of 70 per cent of that required for a mile of single track, and that a mile of siding can be maintained at 50 per cent of the cost of maintaining a mile of main track, then, by multiplying the number of miles of extra track by .7, the miles of siding by .5, and adding these results to the number of miles of main track, he will have an adjusted figure representing the number of "track miles" in terms of maintenance. Technically, this figure should be used as the denominator in reducing maintenance of way expenditures to a "per mile" basis.

It is possible, however, to avoid the necessity of making this adjustment and to give proper account to traffic density by using "revenue train miles" as the denominator. Expenditures for way and structure maintenance "per revenue train mile" is perhaps the best ratio for comparing the policies of various roads where it is available. The following table shows the per cent of gross devoted to "maintenance of way and structures" and the amount of such expenditures per revenue train mile for selected Northwest roads:

ANALYSIS OF MAINTENANCE OF WAY EXPENDITURES (1926)

<i>Road</i>	<i>Gross</i>	<i>Maintenance Way and Structures in 1,000's</i>	<i>Per Cent Maintenance Way and Structures to Gross</i>	<i>Per Cent MAINTENANCE WAY AND STRUCTURES EXPENSES</i>	
				<i>Per Revenue Train Mile</i>	<i>Per Mile Track *</i>
Chicago, Milwaukee & St. Paul.	\$160,538	\$24,057	15.0	.663	\$2,149
Chicago & North Western.	154,336	23,291	15.1	†	2,753
Great Northern.	117,384	14,140	12.1	.662	1,726
Northern Pacific. . . .	97,351	12,297	12.6	.626	1,840

* Unadjusted.

† Unavailable.

Nonoperating revenues and expenses.—The first item in Section III of the Standard Income account is designated for purposes of present discussion as "Net operating revenues." This subtotal represents the actual net earnings attributable solely to train operation without any deduction for taxes, bad debts, or fixed charges, and without reference to so-called nonoperating income or expenses. After tax accruals and uncollectible revenues are deducted, Section IV, which is the "Operating income" of the road, is obtained. To this is added certain other items, such as revenues received from the rental of equipment, or joint facilities. Hire of freight cars may be a debit or a credit item, depending on the relative amounts received and charged under the "per diem" arrangement by which freight cars are allowed to go off the parent line. A charge of \$1 per day is allowed to the parent road for all cars which are in use on other lines. On the other hand, the lending road may, and probably will, be using cars of other lines at the same time. If a line is abundantly supplied with freight cars, therefore, it is likely that this item will be a credit, otherwise its receipts will be less than the amounts charged by other roads and the item will be a debit. After adding or subtracting all such items "Total" or "Gross operating income" is obtained, from which must be deducted all charges for equipment and facilities rented from other roads.

Net railway operating income.—When these deductions are made "Net railway operating income" is secured, which is an important subdivision of the Income account. It is this item that is compared with the Interstate Commerce Commission's valuation of the road's property in determining whether a fair return has been earned, and to ascertain, also, if any excess income is available for recapture under the Transportation Act of 1920.

Gross and net income.—The addition of nonoperating income, such as dividends received on stocks owned, interest on bonds and notes owned, rents received for leased properties (as distinct from temporary loans of equipment), and miscellaneous income will give "Gross income." It is this amount which is available for the payment of charges in the form of interest on funded and unfunded debt, and for rents payable for leased properties. It is possible to determine at this point

the number of times total charges have been earned, but it is not possible to tell by how much margin the charges on any particular issue of bonds have been earned. The exact priorities which the various bond issues enjoy in respect to earnings will depend on the security underlying the bonds. Discussion of this matter has been deferred until analysis of the balance sheet is taken up, at which time the whole matter of the position of the various bond issues of a given road is again considered. After deducting all fixed charges from "Gross income," the amount available for dividends on the preferred and common stocks of the company, as well as for special reserves, remains. The balance after these charges is carried to the "Profit and Loss" account in the balance sheet.

For statistical purposes it is frequently desirable to reduce all of the main subdivisions of the Income account to a "per mile" basis. In this way it is possible to compare different roads in respect to such items as "total revenues," "operating expenses," "fixed charges," and "rentals" on a per mile basis. Where "per mile" figures are used in this way to make a comprehensive study of the earnings and expenses of two or more roads they have a real value. On the other hand, erroneous conclusions may result from an attempt to compare two roads by analyzing only certain items on a "per mile" basis. This is true, because the interrelationship that exists between all the accounts found in the income statement is very close. As already stated, it would be illogical merely to compare the fixed charges "per mile" for one road with another road with no reference to earnings, operating expenses, and other income. Much the same thing could be said in respect to almost any phase of the work of analyzing railroad securities. A proper conclusion requires the weighing of many individual factors.

Train movement or traffic statistics.—Another group of statistical data is available from current sources which is not primarily financial, but which deals rather with operating results, and train and car movements. For instance, the *average trainload* measures efficiency in train movements and also gives some clue to the condition of equipment. The heavier the trainload, other things being equal, the lower the overhead expenses of the road in connection with the journey. The addition of more cars to a given train does not increase the cost of hauling proportionately. Heavy train movements may be affected by proper routing and dispatching, and are

also encouraged by adequate locomotive service. There is, however, a limit to the use of such statistics, because of differences in classes of traffic. A road which hauls a substantial amount of bulky and heavy freight, such as coal, may be able to show a large average trainload. On the other hand, a road which is required to handle large amounts of light, but high classification, freight, *per se*, will have a lighter average trainload, although such traffic may be highly profitable.

The percentage of "loaded" to total car mileage indicates the extent to which "empties" must be hauled. It is highly important that a road reduce the hauling of empty cars to a minimum. The reduction of empty car movements may be encouraged by proper routing and classification, although the nature of the territory and character of traffic hauled will make it necessary for some roads to haul proportionately more empty cars than others. This is particularly true in the case of roads which require special equipment for "one way" freight, such as the coal carriers. Other roads, such as the grain carriers, suffer from having heavy one-way movements in traffic, with no opportunity to utilize the necessary movement of empty equipment back to the producing area.

There are still other statistics which are sometimes used in analyzing railroad operations, but these may be considered as secondary to those already suggested. Freight or passenger density, while customarily measured by the number of "ton miles" or passenger miles carried annually per mile of track, may also be computed by dividing total freight train miles or passenger train miles by the number of miles of road. In addition to showing the average freight or passenger revenue derived from a ton mile of freight or a passenger mile, it is also possible to show the average revenue derived from each ton of revenue freight hauled or from each passenger, without reference to the length of haul. Where such a comparison is made, one would expect high revenues per unit on roads with long hauls and vice versa. In other words, the length of haul determines the average revenue per unit of freight or passenger carried and not the character of the freight. In the following table, which is presented for illustrative purposes, are given the various ratios just discussed for four selected Northwest roads: ¹⁶

¹⁶ Data taken from "Standard Statistics," Standard Corporation Records.

OPERATING STATISTICS, SELECTED NORTHWEST ROADS, 1926

Road	Average Revenue Train Load	Per Cent of Loaded to Total Car Mileage	Freight Train Miles per Mile Road	Passenger Train Miles per Mile Road	Average Revenue per Ton Freight	Average Revenue per Passenger
Chicago, Milw. & St. Paul	\$628.38	65.04	1,703	1,530	\$2.53	\$2.10
Chicago & North Western	479.65	*	1,910	2,109	1.88	2.61
Great Northern	873.16	63.41	1,175	1,342	2.66	4.23
Northern Pacific	661.87	69.37	1,507	1,554	3.32	4.50

* Unavailable.

The balance sheet.—The balance sheet has the same significance in railroad accounting as in industrial or public utility accounting; that is, it represents a cross section of the road's financial condition at a given instant of time. The following balance sheet for the Wabash Railway Company, as of December 31, 1925, is presented for discussion purposes. The arrangement of accounts found in this statement conforms closely to the standard in which all railroad balance sheets are published.

BALANCE SHEET FOR WABASH RAILWAY COMPANY

ASSETS		LIABILITIES	
	1925 \$		1925 \$
Investments		Stock	
Investment in Road and		Capital Stock	138,492,967.17
Equipment	253,995,054.93	Long-term Debt	
Improvements on Leased		Funded Debt Unma-	
Property		tured	94,845,954.11
Sinking Funds	36.89		
Deposits in Lieu of		Current Liabilities	
Mortgaged Property		Traffic and Car Serv-	
Sold		ices Payable	1,752,126.93
Miscellaneous Physical		Audited Accounts and	
Property	2,002,561.15	Wages Payable	5,749,385.84
Investments in Affili-		Miscellaneous Accounts	
ated Companies	7,456,534.52	Payable	436,980.51
Other Investments	43,621.00	Interest Matured Un-	
		paid	289,029.50
Total	263,497,808.49	Funded Debt Matured	
Current Assets		Unpaid	10,200.00
Cash	3,560,143.95	Unmatured Interest Ac-	
Special Deposits	5,212,083.84	crued	1,203,645.76
Loans and Bills Receiv-		Unmatured Rents Ac-	
able	4,205,166.77	crued	287,023.35
Traffic and Car Service		Other Current Liabili-	
Balances Receivable	2,025,854.73	ties	259,285.37
Net Balances Due from			
Agents and Conduct-		Total	9,987,677.26
ors	531,568.93		

ASSETS		LIABILITIES	
	1925		1925
Miscellaneous Accounts		Deferred Liabilities	
Receivable	1,992,258.88	Other Deferred Liabilities	182,992.48
Material and Supplies.	4,660,085.04		
Interest and Dividends		Unadjusted Credits	
Receivable	118,551.87	Tax Liability	2,557,431.05
Rents Receivable	43,967.00	Insurance and Casualty	
Other Current Assets..	221,186.46	Reserves	70,814.56
		Operating Reserves ...	23,081.49
Total	22,570,867.47	Accrued Depreciation—	
Deferred Assets		Equipment	7,417,083.53
Working Fund Advances	217,770.41	Other Unadjusted	
Insurance and Other		Credits	2,564,384.64
Funds	39,985.16	Total	12,632,795.27
Other Deferred Assets.	10,978.27		
		Corporate Surplus	
Total	268,733.84	Additions to Property..	395,435.20
Unadjusted Debits		Profit and Loss Balance	33,660,768.75
Rents and Insurance		Total	34,056,203.95
Premiums Paid in			
Advance	65,384.95		
Discount on Funded			
Debt	1,112,138.20		
Other Unadjusted Deb-			
its	1,103,685.63		
Securities Issued or As-			
sumed Unpledged ..	542,047.66		
Securities Issued or As-			
sumed—Pledged	1,037,924.00		
Total	3,861,180.44		
Total Assets	290,198,592.24	Total Liabilities ..	290,198,590.24

Investments.—On the asset side of this statement the first subdivision is headed "Investments." Under this caption are listed: (1) actual physical railroad property, which is owned by the company in the form of road and equipment; (2) sinking funds, representing assets segregated with a trustee under sinking fund and agreements; (3) improvements on leased property which belong to the lessee (there are no such items in the case of the Wabash road and hence this item does not actually appear in the company's statement); (4) deposits in lieu of mortgaged property sold, which represent cash deposits made with the trustee where property secured by mortgage bonds has been sold; (5) miscellaneous physical prop-

erty, which includes various nonrailway properties owned by the company, such as land, building, hotels, or parks; (6) "investments in affiliated companies," which represent the book value of the stocks and bonds of other railroad companies owned, where the investment was originally made for control purposes; (7) "other investments" under which the total book value of outside stocks and bonds owned by the company is stated. Such investments may comprise securities of other roads not controlled, of businesses affiliated with the railroad industry, or of companies not associated in any way whatsoever with the business.

Current assets.—The next subtitle, "Current assets," requires no elaborate description. The various accounts listed under this heading comprise such items as cash, deposits, loans and bills receivable, amounts due from agents and conductors, miscellaneous accounts receivable, inventories and accruals in the form of interest, dividends, or rents.

Computing values for rate making.—At this point it is worth while to consider briefly the items which are included in computing the total value of railroad property for the purpose of determining "excess earnings" under the recapture clause of the Transportation Act of 1920.¹⁷ In theory, valuations of this nature, as well as valuations for rate purposes, should include all assets used in carrying on the regular business of the road, that is, in furnishing freight and passenger transportation and in rendering services incidental thereto. Some clue as to the proper items to be included in determining the *fair value* of railroad property may be found by examining the various elements of income constituting "Net railway operating income." According to the Income account, on page 490, the essential items contributing toward "net railway operating income" are freight revenues, passenger revenues, revenues from special sources, and rentals for equipment, or terminal facilities. The assets responsible for the revenues are for the most part "investment in road and equipment," although investments in affiliated companies, where over 51 per cent of the outstanding stock is owned, should likewise be included. Miscellaneous physical property and other investments, however, should not be included. Cash, materials, and supplies should be included where necessary to railroad oper-

¹⁷ See p. 457.

ation.^{18a} On the other hand, materials and supplies not used for railroad purposes should be excluded. Property accounts, investments in affiliated companies, cash, and materials and supplies, therefore, comprise the more important items that go to make up the assets on which valuation for rate making purposes is made. If the investor will compare the sum of these items, as found in the published balance sheets of the corporation, with the tentative or final valuation placed on the road's assets by the Interstate Commerce Commission, he will be in a position better to determine the investment status of the bonds and stocks of the road. Such a study makes possible a fairly accurate estimate of the real value of the property behind the road's securities. At least, it indicates the value on which the road is permitted to earn before deduction is made for payment of excess earnings to the government.

Capital items.—The first items appearing under liabilities represent the stock and funded debt of the company. These accounts are of special significance to the investor and should be analyzed in some detail. The first matter to consider here is the proportion of total investment made up of bonds, preferred stock, and common stock and surplus. On the average, a somewhat larger proportion of railway investment is represented by bonds than in the case of industrials, and not without good reason. The permanency of railway values and the regularity of income warrants trading on a somewhat thinner equity than would be justified in the industrial field. In fact, it is not uncommon to find 60 per cent of total capitalization represented by bonds in railroad financing. It is more desirable, however, that funded debt should not exceed 50 per cent of all capital investment, including surplus.

Total capitalization, as well as capitalization by classes of securities, may be reduced to a per mile basis by dividing the total amount of securities, or the amount for any class, by the number of miles of track operated. In ascertaining total capitalization, however, it is necessary to provide for leased lines in the proper manner. The total figure ordinarily given for miles of track operated includes both leased and owned property. If total capitalization, as indicated by the amount of bonds and stock of the parent road outstanding, is divided by the total number of miles of track operated, with no provi-

^{18a} Likewise, an adjustment should be made for non-transportation assets where these are relatively important.

sion for the bonds and the stock of leased roads, the figures for "per mile" capitalization will be erroneous. Either the bonds and the stock of the leased roads must be included in the *dividend* or leased mileage must be deducted from the *divisor* before proper results can be obtained. The customary method of making this adjustment, however, is to capitalize rentals at 5 per cent and to substitute this for the bonds and the stocks of leased lines. Total capitalization of a road, then, for comparative purposes, will include bonds and stock outstanding and net rentals capitalized at 5 per cent.

The reduction of total capitalization to a "per mile" basis is desirable for purposes of comparing the capital structures of various roads. When making such comparisons, however, it must be recalled that there are a great many other factors to be considered at the same time. The traffic density of the roads under scrutiny, the character of the traffic hauled, and the nature of the territory through which they run are all matters of vital importance and may explain wide differences in per mile capitalization figures of various roads. A total "per mile" capitalization of \$60,000 to \$75,000 may be high for roads operating in the Northwest, where traffic density is light and construction costs far less than in the densely populated area east of Chicago. On the other hand, a total capitalization per mile of \$200,000 may not be excessive for such roads as the New York Central or the Pennsylvania, which enjoy very heavy passenger and freight density, and which operate through thickly populated areas where land values are very high.

The New York, New Haven & Hartford Railroad is one of the heaviest capitalized roads of the country, with figures running at about \$300,000 per mile. Most roads in trunk line territory, which extends from Chicago to the coast, will run from \$150,000 to \$250,000 per mile of track. In western territory, "per mile" capitalization will normally average between \$40,000 and \$75,000 "per mile" of track. The net capitalization of all roads in the country in 1925 amounted to \$18,190,000,000, which was equivalent to \$74,460 per mile of track. In this figure surplus was not considered. Total investment for all roads, therefore, was somewhat higher, amounting to \$95,594 per mile in 1925.¹⁸ "Per mile" cap-

¹⁸ Taken from "U. S. Statistical Abstract," 1926, pp. 384, 385.

italization data are not significant by themselves. A road can support a heavy capitalization, where traffic density is likewise heavy and traffic is profitable. The Chicago, Milwaukee & St. Paul was unable to support a capitalization of \$60,000 a mile, at a time when the New York Central was able to support a capitalization of \$190,000 per mile and show a reasonable profit.

Current liabilities.—The next item under liabilities, "current liabilities," includes the various items that one would normally expect there. "Traffic and car services payable," and "Accounts and wages payable" include, for the most part, pay roll accruals and accounts payable arising out of railroad operation. The other items, except "Miscellaneous accounts payable," include accruals on funded and unfunded debt and rents accrued.

Other items.—Under "Unadjusted credits" the most important item is "accrued depreciation." This is an offset reserve, and should be deducted from the "Investment in road and equipment" account in ascertaining its real value. The "Surplus account" is generally divided into two parts: one called "Appropriated surplus," and representing a permanent investment in property, the other, "Profit and loss" surplus, which is available for the payment of dividends.

Purchase of railroad securities: bonds.—In purchasing railroad bonds the investor's problem is by no means simple. After studying all the preceding factors relative to the financial operations of the road and its profit making possibilities, it is necessary further to determine the status of the particular bond under consideration in relation to other securities of the road. If all the credit obligations of a road were in two or three categories, representing first, second, and third liens against all its properties, the matter of determining the status of each issue of bonds would be relatively simple. In practice, however, the financial structures of most railroads have been built up over a period of years through the acquisition of a division here and a division there. Part of a road may have been built by means of construction companies, part acquired through a merger, part by a lease arrangement, and part by the purchase of the stocks or the actual assets of other corporations. The funded debt of the parent company, therefore, comprises an intricate mass of underlying and deben-

ture bonds, secured by various mortgages on specific trackage or by general claims against specific parts of the entire system. While it is possible to reduce the total aggregate burden of these obligations to a "per mile" basis, such a figure is more important as a test of the road's general credit than that of any particular issue of bonds.

It is also true that the total burden of these obligations in respect to mileage and earning power is valuable when testing the road's position as a going concern, although such an analysis fails to indicate in any way the priority in claim going with an individual issue of bonds, or the advantages which any particular issue would enjoy in case of foreclosure. Such information is available only through a study of the specific units of road pledged under a given mortgage and the relative value of such sections to the road in question. Underlying, or first mortgage, bonds on important sections of the road, that is, on sections over which traffic density is sufficient to return an excess of income over fixed charges, are better secured than underlying mortgage bonds on sections where the traffic density is light and earnings fail to equal charges. In the event of receivership, unquestionably the first issue of bonds would be well taken care of, while the second issue might fare no better than the unsecured creditors of the road. The obvious conclusion is that a bond, unless the obligation of a road whose general credit is high, should be secured by asset values substantially in excess of the amount of bonds outstanding, and by earnings substantially in excess of charges. Earnings should average at least two times interest requirements in order that the bond should be considered sound.

When a railroad goes into receivership, it is the principal aim of the receivers, as well as the reorganization committees, to cut down charges. Therefore, they look over the railroad properties and compare earnings on different sections of the road with the expenses, including charges, which properly belong to each section. They may find one section with only a small first mortgage outstanding, where interest charges are earned four or five times. On another section there may be two or three bond issues outstanding, while earnings are insufficient to equal the charges even on the underlying securities. First, or even junior, mortgage bonds of the first section might easily be left undisturbed, whereas the holders of

the bonds covering the second section would be required to make sacrifices. If the bondholders did not wish to accept the terms offered by the reorganization committees, the most they could do would be to foreclose. Such action might bring little or no relief, where the section had not been profitable prior to default. As a practical matter, therefore, the bondholders would probably do better by accepting the terms offered than by foreclosing, for a section that is unable to earn charges when operating with the whole unit as a going concern is less likely to earn charges when operated independently.

Preferred stocks.—The preferred stocks of railroad companies differ but little in their investment aspects from the preferred stocks of utilities. Unless dividends on the preferred stock issue are guaranteed, as is the case frequently where a subsidiary company is leased by the parent company, a railroad preferred stock is secure in proportion as underlying assets and earnings exceed the amount of stock outstanding and dividend requirements. As a general rule, preferred stocks in railroad companies with proportionately large bond issues outstanding are not as desirable as preferred stocks of railroads with a low percentage of total capitalization in the form of funded debt.

The relative stability that railroad earnings normally enjoy and the fact that preferred stocks are quite likely to be represented by assets of admitted value, and, hence, entitled to a predetermined earning capacity, preclude the necessity of a wide excess of earnings over dividend requirements. Preferred stock of a road that is moderately well situated and earns its preferred dividend by a 100 per cent margin ordinarily would be considered a good investment. Such a road, however, should show up at least as well as the average in its territory in respect to the preceding ratios discussed. The current yield on high grade railroad preferred stocks will depend largely on money rates. In other words, the same factors that govern the prices of high grade bonds govern the prices of such stocks. The best railroad preferred stocks sell on nearly the same yield basis as high grade bonds. In the present market (1928) the current yield on such stocks will range from 4.75 to 5.5 per cent. On more speculative issues the yield is naturally higher to account for the greater risk, although medium grade issues with relatively low investment risk can be pur-

chased to yield between 5.5 and 6.5 per cent. Issues which are selling on higher yields are for the most part highly speculative.

Railroad common stocks will sell at prices which reflect current per share earnings, current dividend rates, and future prospects. The future possibilities of a railroad can be determined only by an accurate study along the lines already suggested. While it is impossible to state the relation that should obtain between the market price of a given railroad stock and its "per share" earnings or current dividends, it is possible to generalize by stating that a group of railroad stocks at the present time (1928) will average to sell at about 10 times current per share earnings and to yield, currently, between 5 and 5.5 per cent. At the close of 1926 the average price of 40 principal railroad stocks was \$97.25, and the average per share earnings were \$11.97. The ratio of earnings to price was thus 12.3 per cent, or, in terms of multiples, these stocks averaged to sell at about 8.1 times earnings. The ratios for some of these stocks were as follows:¹⁹

<i>Company</i>	<i>% Earned on Current Selling Price</i>	<i>% Current Dividends</i>
Baltimore & Ohio	15.6	5.8
Chesapeake & Ohio	14.2	7.4
Delaware & Hudson.....	9.2	5.2
New York Central.....	16.2	5.1
New Haven	12.8	—
Norfolk & Western.....	15.1	6.1
Pennsylvania	12.5	6.2
Atlantic Coast Line.....	11.3	4.7
Illinois Central	10.3	5.7
Southern Railway	13.5	5.8
Atchison	14.7	4.5
Union Pacific	10.5	6.2
St. Louis & San Francisco.....	15.9	7.2

It is interesting to note that the highest grade common stocks of railroad companies averaged to sell at an approximate price of only 8.1 times earnings, and on a current yield of from 5 to 6 per cent, at a time when high grade industrials sold at from 10 to 12 times earnings and even higher. A partial answer to this paradox is undoubtedly to be found in

¹⁹ *Wall Street Journal*, November 11, 1926.

the lack of confidence which many investors had in the attitude of the Interstate Commerce Commission, on the one hand. On the other hand, there is the possibility that railroad labor organizations will insist on some share of increased earnings as soon as they reach attractive levels. The history of our railroad industry from 1910 to 1920 is too recent to be forgotten.

While the act of 1920 offers some protection to the stockholder, the entire matter of valuation is unsettled. The extent to which the government will insist on recapture is likewise an unknown factor. In fact, the political elements of the situation have made directors of successful railroads reluctant to distribute any very large share of increased earnings as dividends. The tendency has been to divert these as far as possible to expenditures for property. Just when a distribution will be made in the case of such roads as the Atchison, for example, is somewhat problematical. The result is that investors have been slow to give the same weight to earnings as in the case of unregulated industries.

The political aspects of the situation are less offensive to the bondholder and the preferred stockholder, for there is a fairly well defined feeling that these security holders should be adequately protected in respect to their fixed incomes. There is no question, in other words, as to the legitimacy of their return; but whether a succession of "plums" could be distributed to common stockholders without causing at least a burst of political talk is quite another matter.

Summary.—In this chapter it has been possible to give only a cursory treatment of investment analysis as applied to railroad securities. This subject is one of the most complex branches of investment science. The more important bases of comparison have been touched upon. Acquaintance with these will undoubtedly help the beginner. Yet when it is recalled that there are 201 Class I roads in this country, that is, roads with an annual gross revenue of over \$1,000,000, and that the number of different securities outstanding runs well into the thousands, the complexity of the field begins to impress one. Furthermore, statistical comparisons, while they have their place in railroad analysis, do not tell the entire story. Not until a complete survey has been made of the territory through which a road runs, in respect to physical character-

istics, industries, resources, termini, and relations with connecting roads, in addition to a statistical study of its performances over a period of years, can the investor be said to have familiarized himself with the real investment merits of a road's securities. Mastering the field can be expected only after years of constant study and attention to detail.

CHAPTER XX

FINANCIAL INSTITUTIONS—BANKS AND INSURANCE COMPANIES

Common characteristics of financial institutions.—We shall consider in the present chapter the securities of certain selected types of financial institutions: bank stocks, life insurance stocks, and fire insurance stocks. These three types of institutions have at least one common characteristic: their essential business is that of investing. This statement applies even though the business of banking, especially as conducted by the average commercial bank, has recently been extended to include the furnishing of a multitude of collateral services, such as the administration of estates, the furnishing of trustee services, and the operation of safe deposit vaults. In some cases, the commercial bank goes even so far as to conduct an investment banking business through subsidiaries.¹ Insurance companies likewise have other sources of revenue than from investments, namely, revenues derived from an excess of premiums over losses paid. In neither instance, however, can the income from sources other than investments be said to constitute a major portion of total net earnings. Investment trusts, which will be described in the following chapter, are essentially investment undertakings, their sole revenue being derived from investments either in the form of dividends and interest received from the securities they hold, or as a profit on the purchase and sale of securities. Despite the similarity found in these various types of undertaking, there are, however, sufficient points of difference to warrant a separate

¹ Two examples of this situation will suffice to illustrate the tendency. The National City Company is a subsidiary of the National City Bank and conducts solely an investment banking business. Its functions are underwriting and selling securities. The Guaranty Company is a subsidiary of the Guaranty Trust Company of New York and operates in similar fashion.

discussion of the investment characteristics of each type. Consideration will first be given to bank stocks.

Bank Stocks ²

Bank stocks carry double liability.—The first point to be emphasized in a discussion of the securities of banks is that only one type of security is generally found in their capital structure, namely, common stock. Furthermore, the stocks of banks almost invariably carry double liability. That is, in case a bank gets into financial difficulties, the persons in whose name its stock stands are liable for an assessment, in addition to any unpaid assessments on the original subscription price, equal to the par value of their stock. This situation applies not only to national banks, chartered by the United States, but to many state banks as well, and may be attributed to the fiduciary relationship which the bank bears to its depositors and those who hold its notes.

The feature of double liability should be considered by the investor before he purchases bank stocks; but, in case of the larger and better managed banks, it is a matter of theoretical, rather than of practical, importance. This is especially true, where the stock of the bank has advanced in price to a point considerably above par. It is not uncommon for the shares of some of the more important New York banks to sell at prices ranging from \$500 to \$1,000 a share, par being \$100. The higher the price, the less significance to be attached to the matter of the additional assessment which the holder might conceivably be called upon to meet. At the same time,

² The following articles by Paul Gourrich, which appeared in the *Annalist*, may prove helpful as collateral reading in reference to this subject:

1. The Value of Bank Shares as Investments, March 23, 1925, p. 413.
2. The Value of Bank Shares as Investments, March 30, 1925, p. 445.
3. The Value of Bank Shares as Investments, April 20, 1925, p. 550.
4. Bank Shares: The Equitable Trust Co., N. Y., May 4, 1925, p. 613.
5. Testing the Value of a Bank Stock, June 29, 1925, p. 869.
6. A Survey of New York City Banks and Banking, July 17, 1925, p. 53.
7. Changing Trends in New York City Banking, July 31, 1925, p. 117.
8. Banking Position of the New York Federal Reserve Bank, Aug. 14, 1925, p. 183.
9. A Study of Changes in New York Banks, Sept. 1, 1925, p. 279.
10. Analysis of the Banking Economy of New York City: Price Determining Ratios, Dec. 25, 1925, p. 797.

it may be said that the possibilities of such an assessment become more remote as the bank's shares advance in price. The reason for this statement lies in the fact that such market advances must bear some relation to the surplus of the company. That is, an advance in the price of a bank's stock assumes a larger surplus, which affords greater protection to creditors and minimizes the chance of failure on the part of the bank to meet its liabilities when due.

The business of commercial banking explained.—A complete understanding of the investment value of bank stocks depends to some extent on a knowledge of the banking business. We refer here to the business of commercial banking, because this is the only type of banking business conducted on a large scale under the corporate form of organization. Most of the large investment banking houses are partnerships, while many savings banks, particularly in the New England and the Middle Atlantic states, are mutual. Stock savings banks, are more common in other states. In the case of a mutual savings bank its business is run solely in the interest of its depositors. It should be noted in this connection, however, that many of the larger trust companies are now operating savings departments, in which they accept deposits in the same manner as the mutual savings bank and pay the same rate of interest thereon. Furthermore, the investment of the funds received from depositors in this way is required to be handled under the same laws that govern savings banks deposits in the states where they operate. Despite the recent development of savings departments in connection with the operation of trust companies, we are nevertheless justified in considering them primarily as commercial banks.

The commercial bank, whether it be a national bank, a trust company, or a state bank, occupies a position of strategic economic importance in the business community it serves. In addition to receiving deposits it makes loans to business men on short term notes, either secured or unsecured. In the case of notes discounted by corporations, partnerships, or individuals who are engaged in a reputable business, the proceeds of which are to be used for strictly business purposes, no security is required other than that going with the customer's signature on the note. In the case of loans made for other than business or commercial purposes, additional security is

required either in the form of indorsements or of collateral. Accordingly, one finds listed under the resources of most banks two items: unsecured, or commercial, loans; and loans secured by pledge of collateral.

We shall not enter here into an exhaustive analysis of the theory of banking, for this ought to be reasonably familiar to the average student of economics. It should be pointed out, however, that the bank's lending capacity at any given time will depend on the amount of its reserves. Every time a customer discounts a note at the bank normally the proceeds will be credited to his deposit account. Thus do we find that every time a note is discounted the demand deposits of the bank are normally increased. Conservative banking practice, however, requires that certain available reserves be maintained by the bank in ratio to demand liabilities. Furthermore, there are legal requirements in this respect also.³ For this reason we are justified in stating that the lending power of a bank will depend on the amount of its available reserves.⁴

In addition to the actual cash or legal reserves which the bank is required to maintain, in order to be able to meet its demand liabilities and thus to avoid temporary embarrassment, it is also important that its combined capital and surplus should be sufficient to safeguard the bank's creditors against undue shrinkage in the assets of the bank. That is, a bank with a capital and surplus of only \$150,000 could hardly be expected to carry deposits on its books of \$50,000,000. Under such

³ In the case of members of the Federal Reserve System, banks in the large cities are required to maintain lawful reserves equal to 13 per cent of their demand deposits, banks in medium size cities, 10 per cent, and country banks, 7 per cent. Deposits with the Federal Reserve Bank operating in their district is the only type of reserve considered legal. Federal Reserve Banks, on the other hand, must maintain 40 per cent reserve in gold against notes outstanding and 35 per cent against deposits. The amount of cash that member banks are required to keep on hand, therefore, is not determined by law, except where state laws operate. The cash reserves required by state laws in respect to state banks vary, but probably average from 5 per cent to 20 per cent of demand deposits.

⁴ Under our old National Banking Law, now superseded by the Federal Reserve System, National banks were permitted to issue bank notes which were often put in circulation instead of cash. Note-issuing power is now confined largely to Federal Reserve banks, which issue notes secured in part by gold and in part by commercial paper. These notes may be paid out by members of the Federal Reserve System and hence constitute a demand liability of the issuing bank.

conditions, a very small shrinkage in the book value of its assets would wipe out the entire stockholders' investment and threaten loss to the depositors of the bank, or to other creditors. It is the presence of an adequate capital and surplus, therefore, that protects the depositors and the creditors of a bank in the same way that the common stock and the surplus of a manufacturing or public utility company protects the bondholder, or the creditor. In the case of banks, however, it is not necessary that the combined capital and surplus should bear anywhere nearly so high a ratio to liabilities as in the case of many corporations, on account of the relatively low elements of business risk involved in the operation of a bank. Accordingly, we find, on June 30, 1926, that the combined capital and surplus and undivided profits of 7,978 national banks amounted to \$3,089,358,000, whereas total deposits amounted to \$17,092,412,000.⁵ The ratio of stockholders' investment to deposits was approximately 1:5.5. Similar data⁶ for 26 national banks in New York City, as of June 30, 1926, show an *average* combined capital and surplus of \$20,764,800 and average deposits of \$156,224,400. The ratio here was 1:7.5. The average combined capital and surplus of 21 state banks operating in New York City on June 30, 1926, stood at \$5,378,000 whereas the average deposit account stood at \$52,248,700, resulting in a ratio of 1:9.7. One might draw the conclusion from these data that the combined capital and surplus account of the normal commercial bank should range between 10 and 20 per cent of total deposits.

Prosperity of banks, how measured.—Let us consider next the relationship which a well-established bank bears to the business community it serves. Performing, as it does, a necessary service, it is entirely logical that its total business should grow at the same rate as the business of the community grows. Note that we suggest a comparison, not with the increase in population, but with the growth in business transactions in a community. Even though it is possible that the growth in population and business may be proportional, this is by no means always true. Business development of a community may al-

⁵ "Annual Report," Comptroller of the Currency, 1926, p. 21.

⁶ Compiled by Gilbert Elliott & Co., July, 1926.

ways be at a faster or a slower rate than the growth in population. Our interest centers primarily on the increase in the aggregate business of a community when analyzing bank stocks, rather than in the rate at which population increases. Owing to the nature of the banking business, it is inevitable that banks, located in communities whose commercial activities are basic and increasing, offer excellent investment opportunities, as their volume of business ought to increase at least as fast as that of the community.

Such increases in the volume of business are usually made possible by transferring a part of the profits of the bank each year to its surplus account, instead of paying all such profits out as dividends. Such accretions to surplus give the bank the necessary funds on which to expand. As we have already observed, every dollar added to the surplus account of the bank enables an expansion in deposits of from 5 to 10 dollars, with a corresponding increase in net earnings.⁷ Surplus, reinvested in this way, may be said to "compound" in the interest of the common stockholder. Where the business of the bank increases at a rate so rapid that it cannot be financed out of surplus accretions new stock is issued to the present stockholders at prices below the then market price, thus creating valuable subscription rights. This serves as an explanation of the rather startling comparisons that may be made in reference to the prices at which bank shares sell in relation to book values, dividends, and earnings.

Assets and earnings: a study of current ratios.—During the past several years bank shares have averaged to sell at prices considerably in excess of the book value of the underlying assets per share. On July 20, 1926, the average price of the stocks of 26 New York national banks was \$504.50, whereas the average book value of the shares of these banks was but \$271.⁸ Similar data for 22 state banks shows an average per share price of \$551 and average book values of \$267. In the case of 23 trust companies operating in New York the average price of their stock was \$653 per share, and the average per share book value was \$322. In other

⁷ In some instances, at a more rapid rate.

⁸ Based on studies made by Gilbert Elliott & Co., New York, N. Y. An analytical comparison of the New York City banks, July, 1926. Price based on average between bid and asked prices. Book values taken as of June 30, 1926.

words, New York banks, at any rate, then averaged to sell at about twice their book values.

If we compare the market prices of these stocks with cash dividends and annual earnings per share, we will also find market prices relatively higher than in the case of industrials, public utilities, or railroads. The following table ⁹ summarizes these ratios as of July 20, 1926:

AVERAGE MARKET PRICES, PER SHARE EARNINGS AND CASH
DIVIDENDS

(New York Banks)

<i>Institution</i>	<i>Average Market Price per Share</i>	<i>Average Net Earnings per Share</i>	<i>Average Cash Dividends per Share</i>	<i>Ratios Earnings to Market Price *</i>	<i>Dividends to Market Price *</i>
26 National Banks..	\$504.50	\$31.53	\$20.95	5.55%	3.36%
22 State Banks.....	551.00	28.30	13.33	4.73	2.64
23 Trust Companies	653.00	36.78	20.52	5.76	3.40

* In computing these averages some companies were omitted for statistical reasons. Hence discrepancies between ratios as shown by data given and ratios appearing above.

In a somewhat similar study made by Paul Gourrich, which appeared in a recent series of articles in the *Annalist*, it is shown that the stocks of 14 national banks, as of November 1, 1925, sold at prices to average 235 per cent of book values; the stocks of 9 trust companies averaged to sell at 190 per cent of book values; while the stocks of 6 state banks averaged to sell at 252 per cent of book values. In this study it was likewise shown that stocks of the same banks then sold at relatively high levels in relation to earnings and dividends.

RATIO OF MARKET PRICES OF NEW YORK BANK STOCKS TO
EARNINGS AND CASH DIVIDENDS, 1925 *

<i>Institution</i>	<i>Ratio of Earnings per Share to Market Price</i>	<i>Current Dividends to Market Price</i>
14 National Banks.....	5.6%	2.64%
9 Trust Companies	5.5	3.44
6 State Banks	4.7	3.29

* "Analysis of the Banking Economy of New York City," by Paul Gourrich, *Annalist*, Dec. 25, 1925, p. 796.

⁹Based on studies by Gilbert Elliott & Co.

Ratio of earnings to earning assets and deposits.—The ratios here studied not only give the student a fairly representative picture of what may be expected in the way of a current return on bank stocks, but also suggest certain ways in which the stocks of various banks may be analyzed for comparative purposes. There are, however, other significant ratios that may be derived from the financial accounts of banks in making comparative studies. We have already noted that commercial banks derive their earnings largely from investments. These investments are customarily carried under such accounts as loans and discounts and securities owned. In fact, these accounts constitute the bulk of the so-called "earning assets" of a commercial bank. An interesting comparison may be made between the earnings of a bank and the amount of earning assets carried. A somewhat similar basis of comparison involves the relation of earnings to deposits, both demand and aggregate. These ratios will indicate, to some extent, the relative earning power of one bank as compared with another, or as compared with a group of banks in the same community. From the investor's standpoint such ratios are significant, in that the bank with the highest earning power should prove the best investment in the long run, other things remaining equal, for the "compounding" process formerly discussed will proceed at a more rapid rate. The following table, based on Mr. Gourrich's article, will show these ratios for typical New York Banks:

RATIO OF EARNINGS TO EARNING ASSETS AND DEPOSITS

(New York Banks, 1925)

<i>Institution</i>	RATIO		
	<i>Earnings to Earning Assets</i>	<i>Earnings to Demand Deposits</i>	<i>Earnings to Aggregate Deposits</i>
14 National Banks.....	2.27%	2.60%	1.98%
9 Trust Companies.....	1.45	.88	1.08
6 State Banks.....	1.41	1.45	.98

It is also true that the ratio of "earnings to assets" will be higher during periods of high interest rates, for the reason that all assets, loans and discounts, and bonds yield a greater return.

Ratio of earnings to capital and surplus.—The ratio of earnings to combined capital and surplus is another indication of the earning power of the bank and is perhaps a better indication of the rate at which the compounding process takes place than are the preceding ratios, for here is reflected the aggregate or composite picture for all departments of the business. The capital and surplus of the enterprise is the invested fund which provides the financing for all branches of the bank's business. By comparing earnings to earning assets one is likely to be led into error, for earnings include not only interest and dividends received, but revenues from a variety of collateral services. The ratio of total earnings to total investment, however, reflects the earning power of capital invested in the business.

The amount of net earnings after payment of expenses and the addition of recovered charge-offs shown for 7,978 national banks for the year ended June 30, 1926, was \$394,557,000 as compared with an aggregate capital and surplus of \$3,089,358,000, which indicates an aggregate earning power of about 12.8 per cent.¹⁰ In a recent study covering 38 New York banks and trust companies it was shown that they averaged to earn 11.9 per cent on their capital, surplus, and undivided profits in 1926 against 12.3 per cent in 1925. There was a wide difference in the earnings of the various banks, however. The distribution¹¹ of earning rates for 1926 follows:

FREQUENCY DISTRIBUTION OF RATIOS OF EARNINGS TO CAPITAL
(Surplus and Undivided Profits, 38 New York Banks and Trust Companies, 1926)

<i>% Rate of Earnings</i>	<i>No. of Companies</i>
0 to 5	1
5 to 10	9
10 to 15	20
15 to 20	6
over 20	2

Bank stocks, importance of management in.—The purchase of bank stocks requires an especially close check on the management of the bank. The personnel of the bank's

¹⁰ Data taken from "Annual Report," Comptroller of the Currency, 1926, pp. 21, 42.

¹¹ *Wall Street Journal*, January 31, 1927.

directors and their underlying policies are matters of the utmost importance to the stockholder. It is easily possible for a bank to make unsound loans and to pursue unsound policies for a considerable time without detection. Not until the failure of some of its large creditors occurs does it become necessary to write off assets. It should always be remembered that the stocks of a bank are no better than the *poorest* assets carried on its books, for the first losses must be borne by the stockholders. Unwise policies, it is true, may increase current earnings for a while, at least; but eventually they are likely to prove disastrous to creditors and stockholders alike. These words of caution are given to show that too great reliance cannot be placed on mere statistical analysis in studying the relative merits of one bank as compared with another. Quite as important is a thorough acquaintance with the bank's officers and policies.

Insurance Companies ¹²

Classification of.—The business of insurance is ordinarily classified according to the following 5 groups, depending upon the type of risk assumed: life, fire, casualty, marine, and miscellaneous. The greatest investment interest at present lies in companies of the first two groups. We shall, therefore, consider only the stocks of life and fire insurance companies in this work.

The business of both life and fire insurance is at present conducted by two distinct types of companies: stock companies and mutual companies. In the latter case, the policyholders

¹² The following series of articles, which appeared recently in the *Annalist*, will prove helpful as collateral reading in connection with insurance stocks:

1. Insurance Stocks as Investments.....Aug. 21, 1925, p. 215
2. Insurance Stocks as Investments.....Aug. 28, 1925, p. 247
3. A Study of Investment Policies of Insurance Companies..Nov. 13, 1925, p. 605
4. Stock Holdings of Insurance Companies.....Nov. 27, 1925, p. 667
5. Bond Holdings of Insurance Companies.....Dec. 4, 1925, p. 701
6. Industrial Stock Holdings of Insurance Companies....Dec. 11, 1925, p. 733
7. Preferred Stock Holdings of Insurance Companies....Jan. 1, 1926, p. 4
8. Title & Mortgage Guaranty Company Investment HoldingsJan. 29, 1926, p. 179
9. Title & Mortgage Guaranty Company Earnings.....Feb. 5, 1926, p. 215
10. The Financial Machinery of Fire Insurance Companies..Feb. 26, 1926, p. 307
11. Fire & Marine Insurance Company Earnings.....Mar. 5, 1926, p. 339
12. Price Determining Ratios of Fire Insurance Stocks....Mar. 19, 1926, p. 403

own the business in much the same way as do the depositors of mutual savings banks. In the former case, on the other hand, the company is conducted under the corporate form of organization and the policyholders are only creditors of the business to the extent of their policy contracts. It is apparent that the investor's interest lies in the stock companies, not in the mutual companies.

Life insurance, nature of.—It is necessary to have at least a general idea of the nature of the business of life insurance before one can determine the relative desirability of the stocks of life companies from an investment standpoint, and especially before an analysis can be made of the financial data available in connection with different companies. It may be said that insurance companies deal in risks. The business of life insurance has been so long established, however, that the types of risk in which it deals can be measured with mathematical precision. That is to say, while it is impossible to tell which members of a group of 1,000 males, age 20, will die during the ensuing year, it is possible to tell how many out of the group will die. Likewise, it is possible to compute the life expectancy of a normal man at any age. Therefore, if the insuring company can spread its risks over a large group of men, it can afford to insure the lives of each in return for a premium which is computed on the basis of his life expectancy. If there were no interest to be earned on accumulated premiums, each would have to pay annually an amount sufficient to build up a sum equal to the value of his policy at death, plus whatever operating expenses and profit were required by the company as an inducement to continue in business. As it happens, the amounts actually required to be paid in are immediately invested by the insurance company. Accordingly, when computing the premium to be charged, it is assumed that a certain rate of interest will be earned on the unused portions of current premiums. This is a very general picture of the basic principles on which life insurance companies operate. There are many different types of policies which we need not go into, since they all involve the basic principles just discussed.

Mortality tables and interest rates in common use.—In the computation of the premiums to be charged for various policies the life insurance companies of this country use one of two

mortality tables. The two tables in general use at the present time are the "Actuaries" or "Combined Experience Table" and the "American Experience Table." A somewhat newer table, the "American Men Mortality Table," has recently been compiled by a joint committee of insurance commissioners and actuaries and probably represents more accurately the actual mortality rates to which the present generation is subject. According to the last mentioned table, our life expectancy at present is longer than that assumed by the first two tables. Guided by motives of conservatism, however, most insurance companies continue to use one or the other of the two first mentioned. The rate of interest at which it is assumed that the unused portions of current premiums will be invested and accumulated is $3\frac{1}{2}$ per cent in almost all states, although some companies use a rate as low as 3 per cent.

Sources of profit for insurance companies.—We may consider at this point the manner in which the insurance company ordinarily makes a profit. It is apparent that in so far as its actual mortality is less than its expected mortality, to that extent has the company been required to pay out less on claims than total premiums collected, plus accumulated interest thereon. On the other hand, the extent to which the company is able to earn more on its investments than the assumed rate— $3\frac{1}{2}$ per cent—is the extent to which its reserves increase more rapidly than the liabilities under its contracts increase. A further source of profit is created, of course, by reducing selling and administrative expenses.

Recent growth in life insurance business and present tendencies.—The past decade in particular has been especially favorable to insurance companies in all these respects and indications point to a continuance of the present situation. In addition, there has been a much wider appreciation of the value of life insurance, with the result that the volume of insurance underwritten in this country has greatly increased during this present century. The annual amount of new business written and paid for increased from \$1,846,267,000 in 1900 to \$15,472,993,000 in 1925. In 1900 the total amount of life insurance in force was \$8,561,249,000, in 1925, \$71,642,128,000.¹³ When one considers this very rapid increase

¹³ "U. S. Statistical Abstract," 1926, p. 297.

in the volume of business underwritten, together with the fact that modern science has substantially increased the life expectancy of the insured and that interest rates on high grade investments have exceeded the $3\frac{1}{2}$ per cent basis by a comfortable margin, it is easy to understand why the value of the stocks of well managed insurance companies have moved persistently upward during the past twenty-five years. Furthermore, in view of the present rigid supervision to which stock companies are subjected in respect to all departments of their business and the very conservative lines upon which they are run, stocks of the leading life companies must be classed as a conservative type of investment. Liabilities, in so far as the present mortality tables and low interest rates are used in computing legal reserves, are certain to be overstated rather than understated. Assets, on the other hand, consist almost entirely of securities. A further analysis of the types of securities held by life insurance companies will show that by far the largest percentage is in bonds and mortgages. Thus, in 1925, out of total admitted assets of \$11,537,615,000 for all life companies in this country, \$4,799,216,000 were invested in real estate mortgages, while \$4,331,288,000 were carried under the heading "bonds owned." The next largest item represented loans to policyholders secured by pledge of policies. The amount of this item was \$1,445,507,000. In 1925, therefore, \$10,576,011,000, or about 92 per cent of all assets, were in the most conservative types of investment available.¹⁴

Up to this point, discussion has been confined largely to the investment status of the stocks of life insurance companies as a class. No intentional effort has been made to treat the different bases to be used in analyzing the relative desirability of the stock of one company as compared with another.

Investment tests, past history, and rate of growth.—The first test suggested in reference to the analysis of individual companies pertains to the rate of growth experienced by the company under question. It is true that total or aggregate business underwritten by all companies has greatly increased during the past twenty-five years, but this does not necessarily mean that the business of any one company has likewise in-

¹⁴ "U. S. Statistical Abstract," 1926, p. 297.

creased. The volume of new business written annually, the kind of business, and the total insurance in force should be studied over a ten-year period when analyzing insurance companies, and the rate of growth exhibited should be at least equal to that shown for the country as a whole. There is strong presumptive evidence against a company whose new business is not showing satisfactory expansion. Such a situation may result from any of several causes. The management may not enjoy the confidence of the possible insurer, costs of doing business may be so high that premium costs are excessive, the types of policy it issues may be unsatisfactory, or the officers may not be sufficiently active in promoting sales. In any event, much of the real profit derived from investing in life companies results, in the final analysis, from a rapid growth in business underwritten. This increase frequently requires additional capital for the business which is customarily acquired by increases in capital stock. This, of course, results in valuable subscription rights to the stockholders of the company.

Ratio of actual to expected mortality and average investment return.—Another test of the policies of the management of a given company is found in the ratio of actual to expected mortality. In most companies this ratio will run between 50 and 60 per cent. Obviously the greater the care used in the selection of risks, the lower this ratio will be. The effect of a low mortality ratio on earnings has already been discussed. Closely akin to this ratio in its effect on earnings, is the *net* rate earned on *mean ledger assets*. Stated somewhat less technically, we are interested in the per cent earned on investments. Whereas $3\frac{1}{2}$ per cent is the rate generally assumed for actuarial purposes, most companies earn at present between 4 and 5 per cent. A company may be said to do well where it earns over 5 per cent on its mean, or average, ledger assets.

Ratio of expenses to premiums.—The investor is likewise interested in the expenses which the company incurs, not only in securing business but also in conducting its business. The premium paid by the insured is ordinarily "loaded" with the estimated cost of acquiring new business. A comparison of estimated expenses with actual expenses for a given company, as well as a comparison of the expenses of different companies,

may be had by analyzing such ratios as "first year commissions to new premiums," "first year expenses to new premiums," "renewal loadings to renewal premiums," and "total insurance expenses less first year expenses to renewal premiums." These ratios are ordinarily given in the various published reports of insurance companies as found either in the annual reports of various state insurance commissions or in Best's "Life Reports."¹⁵

Methods of computing net earnings and true book values for insurance stocks.—One of the most difficult aspects of analysis in connection with life insurance companies pertains to the manner of computing net earnings and the book value of assets per share of stock. In the case of a typical industrial or public utility company, the computation of earnings and assets per share of stock is largely a matter of accounting. With the life insurance company, however, such computations involve rather complex actuarial methods. The reason for this lies in the fact that the company rarely knows how it is coming out on any given contract for many years after the contract has been assumed. A mere analysis of the income and the outgo of a company in a given year thus fails to indicate in any way the contingent liabilities assumed under new policies written. The company in any given year actually pays out claims on business acquired or assumed in past years, and is receiving premiums against policies which may become due many years hence. For this reason, it is necessary to estimate earnings in some way that is reasonably accurate and yet which is not too involved. A method sometimes used provides that the surplus account at the beginning of the year under consideration be subtracted from the surplus account at the end of the year. To this amount should be added all dividends paid, whether in stock or in cash. The result so obtained will show net earnings based on the assumption that that portion of new premiums carried to the *net reserves life* account will actually become necessary in meeting subsequent

¹⁵ It is recommended that the student be referred to Best's "Life Insurance Reports," for further explanation of the ratios discussed in the present section of this chapter. In the introductory section will be found an illuminating discussion of life insurance principles and practice. The subject is necessarily intricate and cannot be fully covered in the present work.

losses. This will be true only in so far as actual mortality equals expected mortality, plus operating expenses, and in so far as the company earns only an assumed rate of interest on its investment (usually $3\frac{1}{2}$ per cent). In practice, as we have seen, many companies perform better than is anticipated. As a practical matter, therefore, the net reserves life account is generally in excess of what will actually be required to meet claims. A part of this account, therefore, is a proprietorship item, and not a real liability. Accordingly, if one computes earnings strictly on the basis just described he will be over-conservative. Actual earnings will be somewhat in excess of his computations. The extent to which further additions should be made, however, is a matter of estimate and depends on the ratio of actual to expected mortality, the investment return which the company shows, and its costs of doing business. It is impossible to develop at this time a formula that can be used satisfactorily for making this estimate, although some statisticians arrive at this amount by adding to annual earnings, as previously described, from 35 to 40 per cent of the annual increase in net reserves life.

The same situation exists when it is attempted to derive the book value per share of stock in the case of life companies. If one simply adds the surplus and capital stock accounts and divides by the number of shares of stock, he will get a value considerably under the liquidating value of the stock, in that the net reserve life account is overestimated in the case of most companies. Again, the matter of estimating the proportion of legal reserves that should be charged back to surplus in order to show the true mathematical situation is hazardous, although some statisticians use 35 or 40 per cent for this purpose. That is, in computing the book value of an insurance company's stock, 35 to 40 per cent of net reserve life is added to the combined capital and surplus of the company.

Analysis of Travelers' Insurance Company.—It is only on some such basis as this that one can explain the present prices of the stocks of leading life insurance companies. Let us take, as an example, the case of the Travelers' Insurance Company. During the first part of 1926 the stock of this company sold at between \$1,000 and \$1,200 per share. Earnings (based on life insurance business only) may be computed as follows:

Net Increase in Surplus, 1924 to 1925.....	\$1,957,859 *
Dividends Paid to Stockholders.....	1,000,000
<hr/>	
Total Net	\$2,957,859
Number of Shares.....	120,000
Earnings per Share.....	\$24.60
Cash Dividends	\$22.00 †
Total Capital	\$12,000,000
Surplus	19,538,637
<hr/>	
	\$31,538,637
<hr/>	
Computed Book Value per Share.....	\$262.80

RECAPITULATION—PRICE—EARNINGS—DIVIDENDS—BOOK VALUE

(Travelers' Insurance Co., Year Ended 1926)

<i>Earnings per Share</i>	<i>Cash</i>	<i>Book Value per Share</i>	<i>Market Price Approx. Jan. 1, 1926</i>	RATIO		
	<i>Dividends per Share 1925</i>			<i>Earnings to Market</i>	<i>Divi- dends to Market</i>	<i>Book Value to Market</i>
\$24.60 †	\$22.00	\$262.80	\$1,200	2.05%	1.83%	21.8%

* As given in "Gain and Loss Exhibit," Best's "Insurance Reports," 1926-1927, p. 881.

† Total dividends paid, \$22 per share. (Including dividends received from subsidiaries.)

‡ Based on underwriting gain or loss and investment income, subsidiaries earned a total of \$1,055,677 in 1925. This is equivalent to about \$9 per share in addition.

If, on the other hand, one considers that 35 per cent of the net reserves of the company, carried at \$262,230,909, represents an amount which really belongs to the stockholders, in that this account is now overestimated to that extent, then we would recompute our per share book values as follows:

Present Proprietorship Equity.....	\$ 31,538,637
35% of Present Reserves.....	91,780,818
<hr/>	
	\$123,319,455
<hr/>	
New Book Value per Share.....	\$1,027.70

If one continued with this same line of reasoning and computed earnings by adding, (1) increase in earned surplus, (2) cash and stock dividends paid, and (3) 35 per cent of annual increase in net reserves, he would arrive at the following figures for adjusted earnings per share of the stock of this company:

Net Earnings	\$ 2,957,859	(increase in surplus and dividends)
35% of Increase in Net Reserves Life.....	12,848,388	
Adjusted Net	\$15,806,247	
Per Share	\$131.70 *	
Ratio Adjusted Net to Market Values.....	10.8%	(at approximate 1926 market price of \$1,220)

* Exclusive of earnings from casualty, indemnity, and fire business, estimated at about \$9 a share, see p. 531. The lack of adequate data makes this estimate unreliable.

The following table presents the more important ratios worked out on the preceding basis for three large Connecticut companies and one Boston company.

ANALYSIS OF SELECTED INSURANCE COMPANIES

(Based on 1925 Data and 1926 Stock Prices)

Company	Adjusted per Share Book Value	Adjusted per Share Earnings	Market Value per Share	RATIOS		
				Book Value to Market Value	Earnings to Market Value	Current Yield
Aetna Life *	\$909.50	\$86.05	\$675.00	135%	12.75%	1.77%
Connecticut General.....	1,235.50	223.35	1,687.50	74.5	13.25	.89
Columbian National (Boston)	748.00	42.30	170.00	440	24.80	4.10 †
Travelers' Insurance Co. *	1,027.70	131.70	1,220.00	84	10.8	1.83

* This analysis does not consider subsidiary business of either company on account of the difficulty of combining accounts.

† It is interesting to note that the stock of this company has had a 100 point rise since this study was made (October, 1927).

When the book values and earnings of life insurance companies are computed on the "adjusted basis," the current prices for their stocks can be explained in part. A further explanation is undoubtedly to be found in the nature of the insurance business and the remarkable absence of risk in well managed companies. The assets of insurance companies consist largely of the highest type of investment securities. Their stock, therefore, represents ownership in a fund of diversified and well selected investments. Furthermore, the actuarial certainty with which losses can be predicted eliminates the hazards of the insurance business. In the case of growing companies, also, there is an opportunity for the same compounding process to operate that we observed in the case of banks. Each dollar of added investment, whether coming from earnings or new

investment, enables the company to increase its business many times, and, consequently, its earnings.

Fire insurance, general characteristics, comparison of, with life insurance.—The business of fire insurance is similar in many ways to that of life insurance. Nevertheless there are points of dissimilarity which are fundamental to the investor. If we consider first the points of similarity, we find that the chief business of fire companies is the assumption of risks. Actuarial standards have been set up by which the company can determine how many out of every 1,000 structures of a given type and similarly located will burn each year, although it cannot tell which particular one will burn. It is possible, in other words, to express mathematically the chance of loss on any given policy. The company, of course, can afford to take such risks if it writes enough policies, covering risks in different locations, to permit the law of averages to work. In computing the premiums necessary to cover the risks involved in their policies, fire companies likewise assume that the unused portions of their premiums will be invested. This results in a somewhat lower premium rate than would be necessary if their reserves were not invested.

Coming next to points of dissimilarity, one must first consider the length of time that fire policies normally run. Generally speaking, fire insurance policies, and such other policies as are customarily written by fire companies, run for one, three, or five years. After the expiration of the policy no further liability attaches to the company and the whole premium may be considered to have been earned by the company at that time, if no claims have been presented to the insurance company for losses. In theory, as well as in practice, therefore, the business of fire insurance differs basically from that of life insurance. The fire insurance company is not required to set up out of premiums the same kind of a reserve against policies in force as are life companies. The former type of company, upon writing a policy, therefore, credits an unearned premium account for the entire premiums received. As the policy continues in force a certain portion of the unearned premium is considered to have been earned. Thus, in any year, the earned premiums of the company will be represented, not by gross premiums received, but by such portions of unearned premiums as become earned. Accordingly,

it is a relatively easy matter to determine the net earnings per share for stocks of fire insurance companies as well as their book values.

Another point to be observed in comparing fire to life insurance is the danger of concentrating risks in the former case. A fire insurance company is liable to have a rather large total of risks in a given city. This presents a dangerous situation, even though a proper distribution of risks is found within the city itself. It thus happened at the time of the San Francisco earthquake and fire that many companies suffered very severe losses. Nor can this situation be entirely eliminated, except by reducing greatly the volume of business underwritten in the more important cities, a policy which, undoubtedly, would cut down the volume of business of the larger companies. This situation is guarded against in part by reinsuring when too great a concentration of risk appears on the company's books, but cannot be entirely eliminated. The only way a similar concentration of risk could be assumed by a life company would be to write a very large policy on the life of one man. Where this is done, the company can sufficiently relieve itself by reinsuring a part of its risk with other companies in an effort properly to adjust its individual risk to the total volume of business on its books.

Investment status in fire insurance stocks.—Despite these points of dissimilarity the stocks of well managed fire insurance companies present attractive opportunities for many of the same reasons that were set forth in discussing the investment merit of life insurance stocks. The business of fire insurance is basic and its growth inevitably keeps pace with the increase in material wealth. Well established companies participate in this growth and are able to handle an increasing amount of business annually with surplus earnings reinvested in the business. Where the company's business grows so rapidly that it cannot adequately be handled on the basis of its growing surplus account, additional funds are generally acquired by issuing common stock to present stockholders at a price below the current market price, thus creating for their stockholders valuable subscription rights.

The assets of fire companies are likewise found to consist for the most part of stocks, bonds, and real estate mortgages. The investments which may be made by fire insurance com-

panies are frequently restricted by the states in which they do business in much the same way as are the investments of life companies. It is true that somewhat wider choice is allowed the company, with the result that stocks are more frequently found among the investments of fire companies than of life companies. Where the officers of the fire insurance company are capable, however, this situation is likely to operate to the advantage of its stockholders, for it is possible, in view of the wider latitude given, to increase the average yield on funds invested. In fact, some of the leading fire companies have, within the past several years, made substantial profits through the purchase and sale of securities.

Investment analysis: age and rate of growth.—Our next task will be to develop a technique that may be applied in testing the relative desirability of the stock of one company as compared with that of another. In this connection the matter of age and past rate of growth should be considered. Other things being equal, the older companies are the more desirable. The reason for this situation is found in the fact that the longer a company has been in business the wider its distribution of risks is likely to be. Likewise each added year of operation finds a company with able management more firmly intrenched both financially and in respect to prestige. The more widely known a company is, the lower will be the cost of securing new business. Also it is the rapidly growing company that offers the greatest opportunities for increasing earnings and valuable subscription rights, or possible stock dividends.

Capital and surplus, comparison of, with volume of business.—The combined surplus and capital account of the company represents the excess of admitted assets over all liabilities and measures the stockholders' investment in the business. The amount of this item in relation to combined liabilities constitutes a safety factor for the policyholders. For purposes of analysis, the capital and surplus may be compared with the unearned premium account, rather than with total liabilities, in as much as the unearned premium account represents the amount of theoretical liability assumed on policies in force. Where there are large unpaid losses, such a method is not entirely accurate, however. The average combined capital and surplus accounts of leading fire companies will normally exceed

somewhat the unearned premium reserves as shown by the following table:

COMBINED CAPITAL AND SURPLUS AND UNEARNED PREMIUM RESERVE

(10 Leading Fire Companies, December 31, 1926)

<i>Company</i>	<i>Capital and Surplus</i>	<i>Unearned Premium Reserve</i>
Aetna Insurance Co.	\$ 17,033,916	\$ 27,221,400
American Insurance Co.	8,403,721	14,569,701
Continental Insurance Co.	35,498,904	26,680,044
Fidelity Phenix Insurance Co.	26,217,640	21,362,098
Great American Insurance Co.	30,128,139	19,416,898
Hartford Fire Insurance Co.	27,811,434	45,970,319
Home Insurance Co.	40,068,475	39,756,115
Insurance Co. of North America.	28,048,350	26,044,911
Phoenix Insurance Co.	21,449,152	12,680,370
St. Paul Fire & Mar. Ins. Co.	12,794,273	12,479,340
	<hr/> \$247,454,004	<hr/> \$246,181,196

Unearned premium reserve, nature of.—The unearned premium reserve of a fire insurance company is the amount required by law to be set up as a protection to policyholders. It bears some analogy to the item, "net reserves life," found in the statements of life insurance companies. It may be said to represent the estimated amount that would have to be paid back to policyholders as return premiums if every policy in force were to be canceled. It has already been explained that a part of this reserve is considered as earned as the policies in force mature. In practice, it has been found that about 40 per cent of this reserve often works back to the issuing company.

Ratio of losses incurred to earned premiums.—To estimate more accurately the benefit which the company will derive from its earned premiums, it is necessary to consider the ratio of losses incurred to premiums earned. The significance of this ratio becomes clear if we consider that the premium income of a fire insurance company is not all earned in the year in which it is paid, for the reason that premiums are required to be paid in advance. Premiums earned, we have seen, represent the adjustment between premiums received and the net change, plus or minus, in the company's liability for unearned premiums. Losses, on the other hand, represent the actual amount of losses reported during the year. If, there-

fore, one compares the losses incurred to premiums earned, he has an excellent index of the true loss experience of the company during the period covered.

Ratio of underwriting expense to unearned premiums.—A further comparison is necessary, however, before the complete picture is available. Every company has certain overhead expenses in the way of commissions, rents, salaries, taxes, etc. These are generally grouped under the heading "Underwriting Expenses." If one ascertains the ratio of underwriting expenses to unearned premiums, and uses this in connection with the previous ratio, "losses to earned premiums," he has at his command a complete picture of the success or failure of the company in respect to its insurance business. Generally speaking, a company may be said to do reasonably well if it can keep its losses and underwriting expenses within 100 per cent of its earned premiums, thus leaving its net investment earnings free for its stockholders.

Net earnings and per share book values.—We are now ready to consider methods for computing the net earnings of fire insurance companies and book values per share of stock. In view of the fact that many companies require all of their earned premiums to meet losses and underwriting expenses, and thus show little or no underwriting profit, the computation of net earnings is sometimes made by merely subtracting investment expense from investment income. A more accurate method, however, takes into account: (1) income from investments (less investment expense); (2) gain (or loss) from underwriting; and (3) profit (or loss) on the investment account. A still third method requires that 40 per cent of the net increase in the unearned premium reserve be added to the sum arrived at by the second method. The second method is somewhat more conservative than the last, as well as somewhat more accurate than the first and, accordingly, is recommended. Net earnings may be reduced to a per share basis by dividing by the number of shares of stock outstanding. The liquidating, or book, value, of fire insurance stocks may be estimated by adding (1) paid-in capital, (2) surplus, and (3) 40 per cent of the unearned premium reserve. The reasons for including item 3 we have already discussed.¹⁶

¹⁶ Where investments are carried at less than their market value a further adjustment may be made.

Analysis of Insurance Company of North America.—It is possible to make the preceding analysis for almost any fire company in the United States on the basis of reports published by the insurance commissioners of various states, or from Best's "Insurance Reports," "Fire and Marine Volume."¹⁷ The following material, taken from the Best reports for 1926,¹⁸ is given purely for illustrative purposes:

BALANCE SHEET, INSURANCE COMPANY OF NORTH AMERICA

<i>Admitted Assets, December 31, 1925</i>		<i>Liabilities, December 31, 1925</i>	
Real Estate Owned.....	\$1,100,000.00	Unpaid Losses (net)....	\$6,303,507.50
Mortgage Loans on R. E.	38,750.00	Investigation Expenses .	95,992.50
Accrued Interest Thereon	594.24	Unearned Premiums ...	22,781,373.09
Bonds and Stocks Owned	46,932,036.14	Reclaimable Amounts ..	759,861.11
Accrued Interest Thereon	502,235.26	Accruals	45,567.92
Cash	5,401,851.95	Taxes	960,000.00
Agents Balances	4,719,036.40	Commissions	83,660.89
Receivables	47,766.76	Capital Paid Up.....	7,500,000.00
Reinsurance Receivable.	233,650.66	Net Surplus	20,346,054.85
Impounded Premiums ..	— 99,903.55		
	<hr/>		<hr/>
	\$58,876,017.86		\$58,876,017.86

RATIOS

	<i>Per Cent</i>
Ratio of Losses Incurred to Earned Premiums.....	51.8
Ratio of Underwriting Expenses to Earned Premiums...	48.4
	<hr/>
	100.2
Underwriting Loss	0.2

UNDERWRITING EXHIBIT, 1925

<i>Gains</i>		<i>Losses</i>	
Premiums Earned	\$28,759,177	Losses Incurred	\$14,907,090
P. and L. Items.....	— 4,200	Underwriting Expenses ..	13,912,304
Underwriting Loss	64,417		
	<hr/>		<hr/>
	\$28,819,394		\$28,819,394

INVESTMENT EXHIBIT

<i>Gains</i>		<i>Losses</i>	
Interest, etc., Earned	\$2,158,145	Losses on Investments.....	\$ 5,874
Profit on Investments.....	735,990	Investment Expense	117,465
		Gain	2,770,796
	<hr/>		<hr/>
	\$2,894,135		\$2,894,135

¹⁷ A similar volume is published by the Spectator Company, New York, Connecticut, Rhode Island, and Massachusetts are particularly complete in the number of companies reported and the character of the information.

¹⁸ Reports for 1926, p. 270.

On the basis of the preceding data, we may now proceed to compute net earnings in accordance with the method previously recommended. Premiums earned, less a small adjustment item, were \$28,754,977, while underwriting expenses were \$13,912,304 and losses incurred, \$14,907,090. There was, therefore, a net underwriting loss of \$64,417. From the Investment Exhibit, on the other hand, it appears that investment profit amounted to \$2,770,796. Subtracting from this amount the underwriting loss gives a total net profit of \$2,706,379. There were outstanding as of December 31, 1925, 750,000 shares of stock. Net earnings per share for the year 1925 were, therefore, \$3.60. The total book value of proprietorship equity may be computed as follows: paid-in capital and surplus was \$27,846,055, to which must be added 40 per cent of unearned premiums, or \$9,112,549, thus making a total of \$36,958,604. This is equivalent to a book value of approximately \$49.30 per share, in contrast to the market value for the stock of around \$55 at the year end. The following chart will show a comparison of the market values of selected fire insurance companies with liquidating values, earnings, and dividends, as of March 15, 1927:

LIQUIDATING VALUES, ESTIMATED 1926 PER SHARE EARNINGS,
DIVIDENDS, AND MARCH 15, 1927, MARKET PRICES

(Shares of 10 Fire Insurance Companies *)

<i>Company</i>	<i>Liquidating Values</i>	<i>Estimated 1926 per Share Earnings</i>	<i>Dividends \$ per Share</i>	<i>March 15, 1927 Market Price</i>
Aetna Insurance Co.....	558	26.70	24.00	515
American Insurance Co.....	17	1.15	Unav.	24
Continental Insurance Co.....	115	11.60	6.00	139
Fidelity Phenix Ins. Co.....	87	18.08	7.00	96
Great American Ins. Co.....	303	24.68	16.00	312
Hartford Fire Ins. Co.....	462	33.24	20.00	515
Home Insurance Co.....	323	38.65	18.00	395
Insurance Co. of North America	52	2.19	2.00	56
Phoenix Insurance Co.....	442	48.21	20.00	545
St. Paul Fire & Mar. Ins. Co..	111	11.60	4.00	110

* Liquidating values estimated by combining capital, net surplus, and 40 per cent of unearned premium reserves. Earnings based on: (1) gain or loss from underwriting; (2) profit or loss on investments after investment expenses; (3) income from other securities and real estate owned.

See "Statistical Analysis of Leading Fire Insurance Companies" for years ended December 31, 1924, 1925, and 1926, published by J. K. Rice & Co.

CHAPTER XXI

FINANCIAL INSTITUTIONS—INVESTMENT TRUSTS

Definition of investment trusts.—Investment trusts may be defined as financial institutions organized for the purpose of enabling the individual investor to obtain the advantages of wide diversification. The principal business of the trust is the investment of funds in a diversified list of stocks and bonds. The capital obligations of the trust representing participation in the assets held, therefore, offer to the small investor an investment diversification otherwise impossible. Investment trusts may be distinguished from holding companies, in that the latter are usually formed for the purpose of acquiring managerial control over one or more operating companies, while the former purchase securities solely as investments. Furthermore, the bonds issued by investment trusts must be distinguished from the collateral trust bonds sometimes issued by holding companies. The issuance of the latter is but incidental to the main business of the holding company, while the issuance of bonds by the investment trust is often an essential part of its business, and constitutes an important source of capital with which it conducts its operations.

Origin and development of investment trusts.—The investment trust, while comparatively new in this country, has long been known in Europe. The first investment trust seems to have been founded in Belgium in 1822.¹ In 1860 the first Scottish investment trust was set up. At this time British bonds were selling to yield a 3 per cent return only, while foreign government bonds were yielding from 5 to 6 per cent. Scottish investors were impressed with the higher return on foreign bonds, but did not care to assume the risk of losing all their

¹ "Federal Reserve Bulletin," 1921, Vol. 7, p. 64.

capital by committing it to one foreign investment. The investment trust was formed in order to diversify this risk.

These early institutions were created under a legal form known as the Old English Trust. A few people who had had wide experience in the management of large trust estates were appointed trustees, and capital was intrusted to them for the purpose of acquiring securities. The individual members of the trust received shares therein according to the capital invested. In the event of oversubscription to the capital of the first trust, second, third, and fourth trusts might be formed under the same management and by-laws as the first. In each case, however, the management followed the basic principle of diversifying the securities purchased for the trust account. The typical London and Edinburgh trusts, as distinguished from the financial company to be described later, have the following characteristics:²

A. They raise capital by issuing debentures, and preferred and common shares. The preferred and common shares are generally sold together in the form of £10 share certificates which, when fully paid for, are converted into preferred and common stock in the ratio of 60 per cent to 40 per cent, or 50 per cent to 50 per cent.

B. They invest their funds in a large variety of securities of both foreign and domestic origin, in order that the law of averages may operate in protecting the principal and the income.

C. They limit their investment in any one security, so that no responsibilities of management are incurred.

D. They supervise the investment fund continuously much as any conscientious trustee having discretionary powers.

E. They endeavor to earn a higher return than that ordinarily received on other investments of comparable safety. This is accomplished through:

1. The favorable average interest and dividend yield which the trust gets through careful selection and purchase of securi-

² See "Investment Trusts," "A Survey of the Activities and Forms of Investment Trusts with Recommendations for Statutory Regulation by the New York State Department of Law," Albert Ottinger, Attorney General, and Timothy J. Shea, Assistant Attorney General, Bureau of Securities, 1927, p. 7. (This publication will subsequently be referred to as "Investment Trusts," N. Y. Report.)

ties, and which tends to be higher than could be obtained with equal safety if the capital were not sufficient for considerable diversification.

2. Cash investment profits which are the result of managerial skill.

3. The proper investment of the continuous accumulation of earned reserves and surplus built up consistently year by year from net income, resulting in great part from the spread between the fixed cost in capital obtained through issuance of bonds or preferred shares and the actual earnings made by investing and reinvesting its capital.

The development of the investment trust in England, while not spectacular during the later part of the nineteenth century, was steady. By 1886 there were 12 such trusts, with a capital of £6,500,000, whose securities were listed on the London Exchange.³ By 1890 it is estimated that there were between 50 and 60 such trusts in Edinburgh and London. While the growth in these institutions was less rapid after 1890, nevertheless, from 25 to 30 were organized between 1890 and the outbreak of the War, and it is estimated that, in 1927, there were 125 or more such companies with total paid-in capital assets of over £150,000,000.⁴

The success of British trusts is attributable in part to successful management. The directors of these trusts are generally given wide discretionary powers. They may sell securities from their portfolio in order to avoid losses. Frequently, there are no restrictions imposed in reference to the *type* of security that may be purchased, except that securities which place unlimited liability on the trust may not be purchased. However, directors are generally prevented from investing more than a stated per cent (usually 10) of the capital of the trust in any one security. In this way wide diversification has been obtained. A study of the management of these trusts shows that securities have been selected judiciously, that expenses have been kept down, and that conservative dividend policies have been followed, thus permitting the accumulation of reserves for the purpose of taking care of losses.⁵

³ *Federal Reserve Bulletin*, 1920, Vol. 6, p. 1170.

⁴ "Investment Trusts," N. Y. Report, p. 6.

⁵ Edward M. Campbell, "Management Problems of Investment Trusts," *Harvard Business Review*, Vol. 2, No. 3, p. 298.

In Great Britain, the term "financial company" is reserved for the investment company which specializes in the shares of a particular type of undertaking. Much foreign, commercial, and industrial financing is undertaken in Europe through investment companies which specialize in the shares of rubber, oil, shipping, mining, electric light and power, and railway undertakings. Companies of this nature are known as financial companies or financial trusts. At the close of 1927, it was estimated that there were at least 150 such companies with a total paid-in capital in excess of £200,000,000.⁶

American investment trusts.—American experience with the investment trust is comparatively recent. Prior to the War there were several companies and funds having some of the characteristics of the British trust, but the true investment trust in this country was not developed until after the War.⁷ So rapid has been the growth of the investment trust since the War, however, that the number at the close of 1927 was estimated at over 135, with a paid-in capital in excess of \$400,000,000.⁸ Several reasons for this expansion may be suggested. In the first place, there has been a growing interest in foreign investments arising from our post War position in the world's money market. Large funds for investment have added a further stimulus, while the growing popularity of common stocks as investments, when properly diversified, has facilitated the growth of trusts specializing in common stock investments.

Trusts classified according to methods of raising and managing capital: fixed trusts.—Investment trusts in this country may be divided into three groups, depending on the manner in which they raise and manage their capital.⁹ The simplest

⁶ "Investment Trusts," N. Y. Report, p. 7.

⁷ The first investment trust in this country to follow the British type was the International Securities Trust of America, formed in 1921. Under Section 25(a) of the Federal Reserve Act, popularly known as the Edge Act, it is possible to form companies doing essentially an investment business. The only investment company so far formed is The First Federal Foreign Trust ("Investment Trusts," N. Y. Report, p. 31). Several investment companies of the acceptance type, however, have also been formed. See Speaker, Lawrence M., "The Investment Trust," A. W. Shaw Co., Chicago, 1924, p. 40.

⁸ "Investment Trusts," N. Y. Report, p. 8.

⁹ This basis of classification is used rather than one based on the degree of discretion allowed the managers. The very nature of the fixed trust involves the sale of trustee shares. Discretionary or management trusts raise their

type of trust is the so-called "fixed" or "limited management" trust. The operation of trusts of this nature involves merely the assignment of certain collateral, either stocks or bonds, to a trustee, who issues against such collateral *certificates* known as "banker's" or "trustee's" shares. Additional capital may be raised from time to time by the sale of more certificates. The proceeds of such sale, however, must be used for the purchase of additional collateral under the restrictions set forth in the deed of trust. An example of this type of trust is found in the Bond Investment Trust operated by Harris, Forbes & Company of Boston. Another somewhat similar type of trust is that operated by the American Trustee Share Corporation. This corporation issues certificates payable to bearer, which carry ownership in a group of common stocks deposited with a trustee. A clearer idea of the manner in which this corporation operates may be had from an examination of the form of certificate issued. We shall quote here in part from the Trust Agreement of the American Trustee Share Corporation to the Metropolitan Trust Company (dated June 2, 1924).

Whereas the depositor has acquired the undermentioned shares of the common stock of ten (10) industrial corporations, comprising (1) unit of one hundred and thirty (130) shares, in the following proportions:

<i>Name of Company</i>	<i>Shares</i>	<i>Par Value</i>
American Telephone & Telegraph Company.....	8	100
United Fruit Company.....	4	100
United States Steel Corporation.....	8	100
Studebaker Corporation	20	No par
Westinghouse Electric & Manufacturing Co.....	15	50
American Locomotive Company.....	15	No par
American Woolen Company.....	15	100
American Tobacco Company.....	10	100
Texas Company	20	25
Endicott Johnson Corporation	15	50

capital by the sale of capital obligations, the net proceeds of which go to the general fund to be invested at the discretion of the trustees. Trusts are sometimes classified as follows:

- A. Fixed Trusts.
- B. Limited Management Trusts.
- C. Discretionary Trusts.
 1. With simple capital structures.
 2. With complex capital structures.

(hereinafter generally termed "Stock of the Companies") and intends to acquire from time to time additional shares of Stock of the Companies in identical units as above; and

Whereas, certificates for said Common Stock of the Companies have been issued in the name of the Trustee and deposited with the Trustee; and

Whereas, the Depositor desires to procure the issue by said Trustee of Bearer Certificates with coupons and talons attached thereto in respect of said Stock of the Companies as hereinafter provided in the following form or substantially the following form, to wit:

Certificate No.....

Number of Shares.....

AMERICAN TRUSTEE SHARE CORPORATION

Incorporated under the Laws of the State of New York

BEARER CERTIFICATE

INDUSTRIAL TRUSTEE SHARES REPRESENTING
COMMON STOCK
OF THE UNDERMENTIONED TEN (10) COMPANIES

This is to certify that the bearer of this certificate is the Owner of Participating Shares (hereinafter called "Trustee Shares," "Industrial Trustee Shares," or "Bearer Certificates"), each with par value of ten dollars (\$10), each said Industrial Trustee share being fully paid and nonassessable, and each such share, representing a one-thousandth ($1/1000$) interest in one (1) unit of Shares of the Common Stock of the following ten (10) Companies, which said unit comprises the following shares, namely:"

Then follows the list of companies as previously tabulated.

The remainder of the certificate contains a description of the rights of the certificate holders to participate in the cash dividends received by the trustee, as well as the net cash proceeds from the sale of any stock dividends, subscription rights, securities, or any other property received by the trustee in respect of the stocks deposited under the agreement. Such proceeds are paid by the trustee upon presentation of semi-annual coupons. The certificate holder also has the right to deposit 1,000 certificates, under certain conditions as to time and notice, and to receive the actual shares of stock represented by that number of certificates.

Originally attached to all certificates were 20 dividend coupons representing the semiannual dividends payable on the certificate and a talon, upon the surrender of which, after maturity of the last coupon, the trustee, if the agreement is not terminated prior thereto, upon payment of the sum of one dollar per certificate, will supply the holder additional coupons representing dividends to accrue thereafter for a further period of ten years. Otherwise the holder receives at maturity the actual stock represented by his certificates or his pro-rata share in the proceeds of the sale of the stock.

Investment characteristics of fixed or limited management trusts.—It should be emphasized in connection with this type of trust that the shares as issued merely represent ownership in a cross section of underlying stocks or bonds. It is true that such certificates offer diversity to the small investor, although there is no opportunity for changing collateral and earning a profit through purchasing and selling operations. The underlying securities remain inflexible until the expiration of the agreement. For the large investor, who can secure diversity in respect to his own purchases, it is difficult to see where such a plan holds forth very many advantages, outside of affording him relief from making his own choices. The essential disadvantage of this type of security arises from its inflexibility. In the event that one or more of the companies whose stock is deposited fails to maintain its position, it is difficult or impossible to substitute collateral with a more promising future. The investor is thus associated, to the happy or bitter end, with the original selection of stocks.

Management investment trusts issuing capital stock only.—Vividly contrasted with the so-called fixed investment trust is the discretionary or management trust, which allows its managers or trustees a certain amount of latitude in the substitution of investments held in its portfolio. The capital structure of the management trust, however, may be simple or complex. We shall first discuss the trust which secures all of its capital by the sale of shares of stock. Such trusts are really nothing more nor less than joint investment ventures under the management of a group of directors or trustees, each shareholder being entitled to his pro-rata share in the fund.

There are both advantages and disadvantages to this type of capital set-up. The advantage lies in the absence of fixed

charges, which result from the issuance of bonds, or of contingent but prior charges, which result from the presence of preferred stocks. The disadvantage in the situation, if it can properly be termed such, lies in the fact that all the shareholders participate ratably in the earnings of the trust. If the trust is able to earn on its invested capital at a rate in excess of the fixed charges incurred by the issuance of bonds or preferred stocks, then it should prove profitable for the stockholders to "trade on their equity" by issuing fixed-income-bearing securities. One of the reasons why European investment trusts issue debentures is that excess earning power, over and above the fixed costs of capital obtained at comparatively low rates, enables more liberal appropriations to reserves and surplus than is possible when only common stock is issued.

Management investment trusts issuing several types of securities.—The majority of American trusts of the management type raise their capital in the same way as the European trusts, by the sale of preferred and common shares, and bonds or debentures. Furthermore, the bonds of investment trusts in this country, as abroad, are not generally secured by the deposit of collateral, but are in the form of debentures, which constitute only an unsecured claim against the assets of the trust. The reason for this situation lies in the added expense occasioned by frequent changes in the collateral held under the deed of trust. Such substitutions in collateral are obviously made necessary by the very nature of the trust's business.

In European practice it is customary to maintain a book value behind debentures equal to between 200 and 300 per cent of the amount outstanding. In the case of American debentures not having convertible or participating features about the same security is maintained by the better managed trusts. In cases where the debentures are accorded participating or convertible features, or where they are issued with common stock or warrants, they are often secured by a lower proportionate book value.

Legal forms assumed by American investment trusts.—Whereas European investment trusts are usually incorporated, like banks, under the General Companies Acts, American investment trusts may be organized as corporations or as "express trusts." Incorporated trusts operate for the most part under the incorporation acts of Maryland, or Delaware,

although there are a number of trusts incorporated under the laws of New York. The laws of Delaware are particularly favorable, in that no inheritance taxes are imposed on the holder of securities of a nonresident decedent, and stockholders or directors may hold their meetings outside the state. Delaware also allows the trust wide latitude in the kinds of business that may be undertaken.

One of the largest investment trusts in this country was originally organized as a Massachusetts trust, an express trust, or a voluntary association.¹⁰ Among the advantages claimed for this form of organization may be mentioned the possibilities of quicker action on important matters than can be secured under the corporate form and the escape from many of the restrictions imposed on the directors of corporations. Trustees are often selected for life in the case of investment trusts, a fact which assures continuity of management.

Restrictions regarding trust investments.—The success or failure of a given investment trust will depend in a large measure on the character of its management. Nevertheless, restrictions of varying degree may be imposed on the directors or trustees in the management of the trust. Restrictions of this nature may be found in the corporate charter or by-laws, where the trust is incorporated, or they may be found in the deed of trust or articles of association, where the fund is organized as a voluntary association.

The Allied International Investing Corporation, organized under the Delaware laws, may be used to illustrate a trust with very few investment restrictions. The charter of this trust contains the following provisions:¹¹

The nature of the business of this Corporation and the objects and purposes to be transacted, promoted and carried out by it are as follows:

To acquire by purchase, subscription, contract or otherwise and to hold, sell, exchange, mortgage, pledge, or otherwise dispose of, all forms of securities . . . and to aid by loan, subsidy, guaranty or otherwise, any person or persons issuing, creating or responsible for any such bonds

¹⁰ For a complete discussion of the Massachusetts Trust, see Gerstenberg, C. W., "Financial Organization and Management," pp. 56-71, 1924, Prentice-Hall, Inc., 70 Fifth Ave., New York.

¹¹ "Investment Trusts," N. Y. Report, p. 31.

or other evidences of indebtedness, of stock or certificates of interest therein, or other securities owned or held by this corporation, or by any corporation in which this corporation may have an interest as stockholder or otherwise. . . . To purchase, acquire, hold, sell, exchange, mortgage . . . of every kind, character and description . . . to purchase, sell and deal generally in foreign and domestic exchange. To make, enter into and carry out any arrangements which may be deemed to be for the benefit of this corporation, with any domestic or foreign governmental, municipal or public authority. . . . To acquire, in whole or in part the business, good will, rights, property and assets of all kinds. . . . To apply for, obtain, register, purchase, lease or otherwise acquire. . . . To act in any and all parts of the world in any capacity whatsoever. . . . To cause to be formed, merged or reorganized or liquidated. . . . To borrow money; to issue bonds. . . . To endorse or guarantee the payment of principal or interest, or dividends. . . . To merge, amalgamate or consolidate, in accordance with law, with any other corporation having objects altogether or in part similar to the objects of this corporation. . . . To sell, assign, transfer, convey, mortgage, pledge, and otherwise dispose of, all the property and the entire business of this Corporation. . . . To purchase, hold, sell, transfer, re-issue or cancel, shares of its own capital stock. . . . In any and all parts of the world, to manufacture, produce, purchase, or otherwise acquire, sell or otherwise dispose of, import, export. To enter into, make, perform and carry out or cancel, rescind contracts. . . . To conduct its business in the State of Delaware, and in other states. . . . To undertake, contract, or carry on any business incidental to or in aid of, or convenient or advantageous to, any of the objects or purpose of this Corporation. In general, to do any or all of the things hereinbefore set forth, and such other things as are incidental or conducive to the attainment of the objects and purposes of this corporation. . . .

Also, it being expressly intended that this corporation may engage in enterprises or make investment or reinvestments of a nature which may be deemed speculative or hazardous, and that some one or more of its officers or directors may be personally interested either directly or indirectly, in such enterprises and transactions, and that this corporation may buy from, sell, or deal with, its directors or officers in their individual capacity, or with corporation firms or associations in which this corporation's officers and directors are interested either directly or indirectly.

Also, no director or officer shall be liable to this corporation or to any stockholder or creditor of this corporation, for any error or mistake in judgment, or for any matter or thing whatsoever, except affirmative bad faith, nor for any profit realized by him or them, directly or indirectly, from transactions between this corporation and its officers or directors, or between this corporation and the corporations, firms and

associations in which this corporation's officers or directors are interested.

Somewhat more rigid are the provisions imposed on the trustees under the Declaration of Trust creating the International Securities Trust of America.¹²

ARTICLE IV

1. The business of the trust shall be limited in nature to the investment and reinvestment of capital. The trustees shall not use the funds of this trust in connection with nor engage the trust in any enterprise involving promotion, business management, or underwriting.

2. Upon receipt by them from time to time, of moneys from any source for the account of the trust, the Trustees as soon thereafter as they may deem practicable and desirable shall invest in marketable securities all of such funds then available for investment. No securities shall be purchased by or on behalf of the trust which shall not be eligible for acquisition by the trust under the terms of the Rules and Regulations which shall be adopted by the Trustees; and no securities shall be so purchased unless:

(a) Reliable information shall be obtainable with respect to the history, management, assets, earnings, and income of the governmental authority, corporation, or organization issuing such securities;

(b) Unless the history of the nation or country in which such securities shall have originated shows financial stability and recognition of private property rights; and

(c) The governmental authority, corporation, or organization issuing such securities shall have been established for a period of at least four (4) years.

The trust shall not purchase or otherwise acquire any of its Common Shares, nor shall it purchase or otherwise acquire any of its Preferred Shares, or any of its bonds or other evidences of indebtedness except for the purpose of retirement and cancellation.

3. In selecting securities for purchase in accordance with the foregoing restrictions the Trustees shall exercise their own discretion and shall be entitled to rely upon information believed by them to be reliable, and in no event shall they be liable or responsible in any manner to anyone for so doing.

4. Of the total funds of the trust invested and available for investment by the Trustees, not more than seventy per cent (70%) may be

¹² "Amended Declaration of Trust," made May 25, 1923, p. 15.

invested at any one time in securities originating in the United States of America, not more than fifty-five per cent (55%) may be invested at any one time in securities originating in England, and not more than thirty-five per cent (35%) may be invested at any one time in securities originating in any other nation or country. Not more than ten per cent (10%) of the total funds which may be so invested in securities originating in any one country may be invested in securities representing any one distinct class of business or industry. So long as the total funds of the trust invested or available for investment shall be less One Hundred Thousand Dollars (\$100,000), not more than five per cent (5%) of the total funds which may be so invested in securities originating in any one country may be invested in any one such security; when such total available funds shall amount to One Hundred Thousand Dollars (\$100,000), but shall be less than One Million Dollars (\$1,000,000), not more than three per cent (3%) of the total funds which may be so invested in securities originating in any one country may be invested in any one security; and when such total available funds shall amount to One Million Dollars (\$1,000,000) or over, not more than one and three-fourths per cent (1¾%) of the total funds which may be so invested in securities originating in any one country may be invested in any one such security other than governmental securities. The trust shall never purchase or hold a majority in interest of any one issue of securities.

5. From time to time, the Trustees shall sell and dispose of all securities within one (1) year after they shall have ascertained that such securities would not then be eligible for purchase by them hereunder. The Trustees, in their discretion, at any time and from time to time, may sell and dispose of any securities belonging to the trust, and may invest and reinvest in accordance herewith the proceeds received therefrom.

6. From time to time, as soon after the acquisition thereof as may be practicable, the Trustees shall deposit for safekeeping with one or more banks, trust companies or other financial institutions to be selected by them, all securities held by the trust and not otherwise deposited or pledged as security for the payment of obligations of the trust. The Trustees, from time to time, may withdraw any or all of the securities so deposited for the purpose of selling or disposing thereof or for the purpose of depositing or pledging the same as security for the payment of obligations of the trust. The institutions which may be so selected as depositaries by the Trustees shall be fully protected in acting in accordance with the directions of the Trustees and shall in no event be liable for the proper application of the securities so withdrawn from deposit or the proceeds thereof.

7. The Trustees in their discretion may lend moneys belonging to the trust, but only in case the repayment thereof shall have been secured

by a valid pledge or other hypothecation of securities, at the time eligible for acquisition by the Trustees hereunder, or of bonds or other evidence of indebtedness which shall have been issued by the trust. No such loan shall be made in an amount exceeding eighty-five per cent (85%) of the then market value of such securities or such bonds or other evidences of indebtedness so pledged or hypothecated. In order to realize upon collateral so pledged or hypothecated, the Trustees may bid in and purchase any such securities, bonds or other evidences of indebtedness at a price not exceeding the amount loaned thereon together with unpaid interest, if any.

Some trusts go even further and limit the types of securities that may be purchased. Whereas such a limitation does not appear in the International Securities deed of trust, we find the following investment restrictions in the Bankers Holding Trust's Charter:

This corporation being in effect a trust shall invest its funds up to 80% of its capital and surplus in bonds rated not less than "Baa" by Moody's Investors Service, bank stocks, Insurance Company stocks, first mortgages on improved real estate; balance of 20% of its funds shall be invested at the discretion of the Board of Directors, but only in high grade stocks of successful companies or bonds rated not less than "Baa" by Moody's Investors Service, or Bank Stocks or Insurance Company stocks or first mortgages on improved real estate. Not more than 10% of the capital and surplus can be invested in any one security. The corporation shall not promote any enterprise or participate in any syndicate, but shall buy and sell securities for its own account only, and shall not engage in any brokerage business of any kind, being in all effects a trust, investing its own money in securities as restricted.

Unless there is specific mention, as in this instance, of the securities which shall constitute the investments of the portfolio of the trust, the matter of investments is regulated entirely by the board of directors and is subject to change at any time.

Restrictions on the investment policies of the trustees or directors of a trust fund are not unanimously regarded as desirable. Some students claim that the managers of the fund should be accorded wide latitude in the exercise of their powers. After all, it is the character of management that spells the success or failure of the venture. With good management no restrictions are necessary. On the other hand, the most stringent restrictions are a poor substitute for judgment.

With this in mind it is probable that the most desirable limitations are those which aim to establish the broad policies of the trust, but which do not prescribe too narrowly the kinds of securities which may be purchased.

The trust indenture or trust agreement: fixed trusts.—

Shares of the rigid or fixed type of investment trust, as we have seen, are created by a deed of trust or indenture between a corporation or express trust acting as depositor, and a trust company or corporate trustee, acting in the capacity of trustee for the holders of the participating certificates. At the present time, there is a growing tendency to permit security substitutions even in the case of so-called "fixed" trusts, where they are obviously necessary, in view of the disadvantages that may arise if one or more issues go bad. The protection afforded the investor through the deed of trust in the case of fixed trusts, however, may or may not be effective in all its aspects. In a recent investigation conducted through the office of the Attorney General of New York the following weaknesses were suggested as common to deeds of trust under which fixed trusts operate:¹³

1. There is inadequate protection for the certificate holder against the making of profits by the depositor corporation by putting securities into the trust fund at a higher price than these securities cost to the depositor corporation.

2. There is no protection to the public in most trust agreements or indentures of the rigid, or quasi rigid type, against an unwarranted spread between the market value of securities deposited in the unit and the price at which the participating certificates are currently issued to the public.

3. In several indentures the depositor corporation is given the initial right to buy securities deposited in the fund held with the trustee, the latter's power to obtain the best possible price on the market being accordingly circumscribed to the probable disadvantage of the shareholders.

It would seem that the interests of the certificate holders would be better protected if the trustee were to share such responsibilities of resale and substitution. In this way there would be a better chance that liquidation would occur at the right times and right prices. This is important, in view of the

¹³ "Investment Trusts," N. Y. Report, p. 45 ff.

fact that certificates of this character are marketed to a great extent upon the standing of the trustee and the specific composition of the securities originally deposited.

4. The trustee, by taking advantage of the technical loopholes afforded by the Declaration of Trust, might in many instances be able to avoid responsibility for the depletion in whole or in part of the assets of the Trust. However, the question of just what legal responsibility a bank Trustee should take is a matter of public policy. Moral responsibility ought certainly to lodge with the Trustee. The inherent weakness of this type of Trust is that if neither the Depositor nor the Trustee takes legal responsibility, there is none.

5. In many indentures insufficient provisions are found for assuring an acceptable successor trustee in case the original trustee resigns or is removed.

Indentures and declarations of trust.—The deed of trust under which discretionary trusts issue bonds should not be confused with the declaration of trust under which common law or Massachusetts trusts are created. Although the indentures or trust deeds under which bonds are issued by investment trusts follow closely the legal forms adopted by corporations, differences, nevertheless, have been made necessary by the very nature of the investment trust's business.

Maintenance of adequate security.—It is highly important, for example, that adequate provisions be inserted in the indenture under which investment trusts issue bonds for the maintenance of a minimum ratio of book value of securities (at market or cost) to bonds issued. It is immaterial whether the issue is collaterally secured or whether it is a straight debenture. The indenture under which it is issued should cover this point. In fact, where such a provision is adequately drawn, debenture bonds should be fully as secure as collateral bonds, for a direct limitation is thereby placed on the trust's borrowing powers.

Indentures under which collateral trust bonds are issued usually state the ratio of protection afforded by the deposited collateral. On the other hand, the indentures under which general obligations or debenture bonds are issued limit the funded debt which the issuing corporation may create, by provisions to the effect that no further debt may be created if the ratio of debt to the book value of assets is thereby re-

duced below a stated minimum percentage. Frequently there is a further requirement in the indenture that securities shall be carried at their market values where lower than cost values.

Removal of trustees.—Provisions relating to the removal of trustees and the appointment of new trustees naturally vary among different trusts. It is customary, however, to give a majority of the debenture holders power to remove the acting trustee and to appoint another. The indenture between the Standard Investing Company and the New York Trust Company, for example, provides that the trustee may be removed at any time by the holders of the majority in principal amount of outstanding debentures. The provisions found in the indenture between the General American Investors Company and the Guaranty Trust Company are similar in this respect, although, in the former case, the appointment of the new trustee is in the hands of the Standard Investing Company, while, in the latter, it is in the hands of the debenture holders.¹⁴

Cost of raising capital for management trusts.—Among the London and Edinburgh trusts the cost of raising new capital is frequently less than 2 per cent. Their age, investment position, and the practice of selling issues without having them underwritten tend to lower the cost of marketing their securities. In this country the cost of raising capital for management trusts ranges between $3\frac{1}{4}$ per cent and 10 per cent.¹⁵ Higher costs here are occasioned in part by the practice of distributing new issues through investment banking houses. A contributory reason is the fact that American investment trusts are of recent origin, and have not yet been thoroughly established among investors.

Capital costs of fixed investment trusts.—In the case of the fixed trust, the cost of raising capital is represented by the spread between the cost of the deposited securities and the prices at which the participating certificates are sold to the public. This spread not only provides for the cost of raising capital but for the profits of the organizers, and for trustee expenses also. The larger part of this spread, however, may be considered as a cost for capital. It generally ranges between 10 per cent and 20 per cent, which would

¹⁴ "Investment Trusts," N. Y. Report, p. 60.

¹⁵ "Investment Trusts," N. Y. Report, p. 44.

indicate that the percentage of the investor's dollar which goes into the actual investment of securities is less in the fixed than in the management trust.¹⁶

Relationship between investment funds and fiscal agents.—The cost of raising capital is only one of the expenses chargeable against the assets and income of an investment fund. One must also consider the fees charged for investment service, supervision, and management. In the case of fixed trusts, which do not manage securities beyond the point of original selection, there is no question of subsequent management expense.¹⁷ Where the fund is administered, as in the Scottish type, there must, of course, be some basis for paying those who supervise this work. A fee of one-half of 1 per cent of the investment fund per annum may be considered as a normal charge for such service. This, in fact, is approximately the charge made by the Investment Managers Company on its two funds, by the American Founders Trust, which supervises the two International Securities Trusts, and by the Securities Management Company. (The Mutual Investment Company receives one half of all income and profits in excess of 6 per cent on Class A certificates of the Mutual Investment Fund. In practice this probably results in more than one half of 1 per cent on the aggregate fund.¹⁸) A wide variety of arrangements may be found among various trusts. The essential matter for the prospective purchaser to examine, however, is the effective charge against the income of the fund resulting from the arrangements between the trust and its managers.

A further opportunity for profit to the trust managers lies in the possibility of their themselves selling securities to the fund at a profit. The more conservative trusts are safeguarded against such abuses by provisions in their indentures. Thus, the Investment Managers Company covenants that it

¹⁶ "Investment Trusts," N. Y. Report, p. 43. As explained here, this spread does not represent a further profit that may be made by the managers if they put up collateral at a higher value than the cost to themselves.

¹⁷ The original trustee's expenses are often taken care of at the time the certificates are sold. There is usually a time set when the underlying collateral may be sold or distributed and the trust wound up, or continued for a further stated period upon payment of a specified sum to reimburse the trustee for further services.

¹⁸ "Investment Trusts," N. Y. Report, p. 63.

will not deal with itself, its officers, or directors as principal in making purchases or sales of securities for the account of the fund, but any director, member, or officer of the company may accept customary brokerage commissions on purchases and sales.¹⁹ The International Securities Corporation of America and the Second International Securities Corporation forbid profits in the purchase or sale of securities for their account by the American Founders Trust. The evils of permitting the agent for the trust to profit as principal are too obvious to warrant further discussion.

Published reports.—The policies of investment trusts in Europe and the United States vary in the matter of making public their investment holdings. Most of the management trusts here and abroad do not make public their market position. This policy is due to a feeling on the part of the managers that if the investor does not place full confidence in the management he should not purchase securities. Furthermore, investment lists are constantly changing, and it is claimed that a list published on January 1 might be obsolete on April 1. Perhaps the most important reason for withholding investment lists is the desire to keep such knowledge from outside parties who are not shareholders. The larger trusts spend considerable sums of money in determining the relative worth of securities. If their investment lists were frequently made public they would be giving away information obtained at a substantial cost.

On the other hand, a number of investment trusts, even including those which place no restrictions on investment policies, frequently publish classifications of their investments which indicate type of issue, industries represented, and geographical distribution.

Other trusts publish annual lists showing investments on hand at the end of the fiscal period. Such lists may or may not show the cost and current market value of holdings. In the case of fixed trusts, of course, it is essential that a list of the underlying collateral be published. In fact, the only basis for value in such trusts is the collateral underlying the securities issued, since management has little relation to the investment. Such trusts should be required to state definitely the

¹⁹ "Investment Trusts," N. Y. Report, p. 64.

amount of each security deposited as collateral. Furthermore, any changes in the underlying collateral should be reported at once.

Future of the investment trust.—The recent growth of the investment trust at home and abroad leaves little doubt as to its permanency as an institution of finance. Undoubtedly there will be trusts which fail to meet the reasonable expectations of their sponsors. The ultimate success of any trust depends largely, if not entirely, on management, and management is a personal element which varies widely.

The individual investor will find an analysis of investment trust securities the more difficult on this account. Management cannot be measured and appraised on any statistical basis. It is true that an examination may be made of the charter and by-laws, or of the declaration of trust under which the directors or trustees operate in order to find what restrictions are set forth. But little light is here shed on the future of the trust, for with proper management the fewer the restrictions the better.

The ultimate success of the trust will depend, of course, on the wise selection of securities. This does not mean that securities of the highest grade only should be purchased. There would be little profit accruing to a trust which purchased nothing but Liberty bonds, or high grade state and municipal bonds. The real profits will be made through the purchase of securities which, for one reason or another, are selling at prices below their real worth, or which have good possibilities of future enhancement. This requires discrimination and judgment, but these qualities are expected of trustees.

The matter of dividend policies also determines in part the ultimate success of the trust. The chairman of the Edinburgh Investment Trust states that one of the secrets of trust management is to allow a portion of the net revenue of the trust to accumulate at compound interest.²⁰ In this way reserves are set up to take care of future losses. It is especially necessary that this course be followed, for the trust makes an appeal to the small investor who needs safety and who prefers a stable dividend rate, although small, to a fluctuating one.

²⁰ Robinson, Leland R., "British Investment Trusts," p. 23, U. S. Department of Commerce, 1923.

The more successful trusts have both visible and invisible reserves to meet losses that must inevitably occur in their underlying collateral.

The original charge made against the investor's dollar for securing capital for trust operation and the subsequent management charges should be examined before a commitment is made, as well as the fiduciary relations with the managers that are allowed by the trust indenture. A trust which has been set up primarily to afford a profit to its managers is not likely to prove a profitable commitment for the investor.

CHAPTER XXII

INVESTMENTS SECURED BY REAL ESTATE

The most common form of security issued against real estate is the real estate mortgage. This type of security has been known for many centuries. Actual records unearthed in Mesopotamia show that mortgages on real estate were given to secure loans as early as 2100 B.C. The basic uses to which land is put, the dependence of man on land for meeting his every need, the stability of values found in land and real estate, except in areas where speculation has been overdone, make real estate mortgages one of the soundest and most stable of all investments.

Mortgages may be classified in several different ways. A fundamental distinction should be made between mortgages on improved property and those on unimproved and unproductive property, although the fact that property may be only partially or inadequately improved sometimes makes such a distinction difficult. The general criterion involves the question of income. Unimproved property yields no income, while improved property is capable of producing an income. However, the improvements on a given piece of land may be old and obsolete, or may be inadequate to produce an income commensurate with the value of the land. This is the case where worn-out and dilapidated buildings remain on valuable land in business centers. The land, in other words, is inadequately developed or improved, although it may produce a small rental. In such cases, land values alone exist, and, from a practical standpoint, the land may be said to be undeveloped. A more difficult case is presented where the buildings are by no means modern, although usable, and still yield an income commensurate with a fair return on land values alone, but insufficient to afford much, if any, surplus for improvements. In other words, the property does not yield the greatest amount of rent which the location would be capable of yielding were it ade-

quately improved. Such land is partially, although inadequately, developed. It is sometimes a matter of judgment, therefore, as to what constitutes unimproved property.¹

Another basis of classifying real estate mortgages is according to the uses to which the mortgaged property is put. Residential loans are made on property used strictly for residential purposes. Under this classification are included loans on one, two, and three family houses. Apartment house loans, as the name implies, include mortgages on multi-family or apartment houses. Business property loans include mortgages on store property, loft buildings, office structures, wharves, garages, hotels, theaters, and so on. The term "farm mortgages" is used to designate loans on farm properties.

It would be difficult to say, in a general way, which of these various classes of loans is the most desirable. Some investors prefer strictly residential loans, particularly those which are made by the home-owner instead of a speculator or a contractor. In the former case, the moral factor is decidedly in favor of the mortgagee, for there is a strong incentive on the part of the owner of a home to avoid threatened foreclosure at all costs. On the other hand, residential loans are usually in small denominations. For this reason, a million dollar fund invested in such loans means proportionately more detail than where the average size of the loan is larger. Loans on high grade business property are very desirable if well selected. There is, however, greater opportunity for making errors in this kind of loan. Business centers change rapidly and values may become impaired within a short space of time. On the other hand, there are certain areas that are so well established that almost no question need arise as to the permanency of values.

There is a somewhat higher risk in loans on so-called special purpose property, such as garages, churches, clubhouses, hospitals, and the like. If, for any reason, the enterprise turns out poorly the market for the property is liable to be restricted. For this reason, there are many investors who refuse to lend on this type of property at all and who confine their loans entirely to residential or business properties of general utility, and, consequently, capable of producing a steady income.

¹ See also p. 572.

The inherent safety of real estate mortgage investments has long been recognized. Many states legalize investment by savings banks of a substantial portion of their total funds in mortgages of this type. Thus Massachusetts and New York both permit savings banks to invest up to 70 per cent of their deposits in first mortgages on real estate located within the state and not exceeding 60 per cent of the value of such real estate. If loans are made on unimproved and unproductive real estate the amount lent thereon must not exceed 40 per cent of the appraised value. Insurance companies are also allowed to invest a substantial portion of their funds in first mortgages on improved real estate. Mortgages, properly limited in respect to appraised values, are likewise legal instruments for trust funds in many states.

In contrast with the safety of principal and income which inheres in this type of investment there are certain disadvantages. Mortgages lack marketability and are often in inconvenient denominations.² There is a substantial amount of detail required in supervision. The mortgagee must see to it that adequate insurance is kept on the property, that taxes are properly paid, and that the property is not allowed to depreciate. Furthermore, there is often some bother in the collection of interest. It is also necessary to be familiar with property values in the locality where loans are being made or to rely on independent appraisals.

Distinction between individual mortgages and mortgage bonds.—The real estate mortgage differs but little in its legal details from the mortgage under which mortgage bonds are issued. Since we have already discussed at some length the legal aspects of a mortgage, it is not necessary to take this matter up again.³ It is sufficient to say that the mortgage is really a deed in which a conditional transfer of the title to a specific piece of property is made as security for the payment of a loan. The mortgagee, therefore, holds the legal title to the property, while the mortgagor holds the equity of redemption. In the event of failure on the part of the mortgagor to carry out his part of the agreement the mortgage is said to

² An effort is made to overcome the latter objection, by the issue of real estate mortgage bonds. See pp. 581, 585.

³ See Chapter VII. See also "Individual and Corporation Mortgages," Lilly, William, I. B. A. of A., New York, 1913.

be "in default." The mortgagee then proceeds to foreclose the mortgage.⁴

There are, however, certain fundamental distinctions between individual mortgages and mortgage bonds. The latter represent the right to participate under certain restrictions in a mortgage, but the rights of the holders of mortgage bonds are customarily exercised through the medium of a trustee. The holder of an individual mortgage, however, may proceed alone in the exercise of his legal rights when a default has occurred in the terms of his mortgage. The legal steps to be taken in case of default on ordinary real estate mortgages are likewise relatively simple in most states. It is customary to require the mortgagee, after making proper notification to the mortgagor at his last known address, to advertise the sale of the property for a certain period, after which it must be sold at public auction. Under some mortgages, a court order is required before the sale can take place, but this is not the general practice in the case of real estate mortgages. Where the sale has been conducted under proper conditions, it is final in many states, although not in all. In some localities the mortgagor is allowed a certain period during which he may redeem the property by paying the amount due, plus accrued expenses and a small bonus.⁵ Such a provision, while it may

⁴ The mortgage or deed conveying the property to the mortgagee, subject to the right of redemption by the mortgagor, is the instrument which gives a lien on the property. The note or bond which accompanies the mortgage is the promise of the borrower to pay the debt. In New York State the accompanying document is known as a bond. It consists of three main divisions: (1) the acknowledgment of the debt; (2) the promise to pay; and (3) default provisions.

The deed (mortgage) must be signed by the parties in whose name the property stands, must be acknowledged before a notary (in many states), should be recorded, and must contain the release of dower. The note or bond must be signed by the borrower, but in most states need not be sealed. Ordinarily it is not recorded. Dower has no bearing on the bond, and consequently the wife of the borrower need not sign unless she is coöwner of the property, in which case it is customary to have her join in the bond.

⁵ The expenses of foreclosure include the amount of delinquent interest, taxes in arrears (including penalties and interest), delinquent assessments, court costs and attorney's fees, commission for selling, and repairs to the property after foreclosure. Such expenses will probably increase the face value of the loan from 5 to 40 per cent. In Alabama, where two years must elapse before the mortgagee may secure full possession, they will probably reach the higher figure. In most New England states, where only three weeks are required, they should not exceed 5 to 10 per cent of the face of the loan.

protect the mortgagor, is not entirely satisfactory from the mortgagee's standpoint, in that delinquencies are encouraged thereby.

The mortgage note: periods for which mortgages run.—In practice it is customary for the mortgage to be accompanied by a bond or note which gives evidence of the loan. Such notes carry the same terms, in respect to interest and principal payments, as are contained in the mortgage itself. The mortgage note may be for one, three, or five years, or longer, at the option of the parties concerned. The current practice in some localities is to require a one year note, with the privilege of renewal if the mortgagor pays 5 per cent on the principal of the note after the first year, and otherwise lives up to the covenants of the mortgage, especially in respect to proper maintenance of the property. In other cases, the mortgage is accompanied by a demand note. Such a situation, while it puts the mortgagee in a very strong position, puts the mortgagor in an especially weak position. Technically, the mortgagee has the right at any time to call the principal of the loan. The practice of requiring one year notes with the renewal privilege in case 5 per cent is paid on the principal of the loan is fair to all concerned. It likewise affords the mortgagee adequate protection against normal depreciation in values, as well as some protection against overappraisal.⁶

A three, five, or ten year note, if accompanied by an amortization agreement whereby the loan is reduced by, say, 5 per cent of the principal each year, is likewise a satisfactory arrangement to all concerned. The borrower knows in advance the payments he is expected to make and the lender is given adequate protection against depreciation in values by means of the annual amortization. Mortgages that run for longer than three years without amortization requirements are not altogether satisfactory, unless secured by property in localities where values are likely to appreciate, or unless conservative in amount.

Another type of note, more commonly used in the South

⁶ The values of all buildings decline with age. Such declines in value may occur from wear and tear, termed "depreciation," or from changes in styles of architecture and construction, termed "obsolescence." The normal rate of depreciation depends on the type of construction and uses to which the building is put, and will vary from 1 per cent to 5 per cent a year.

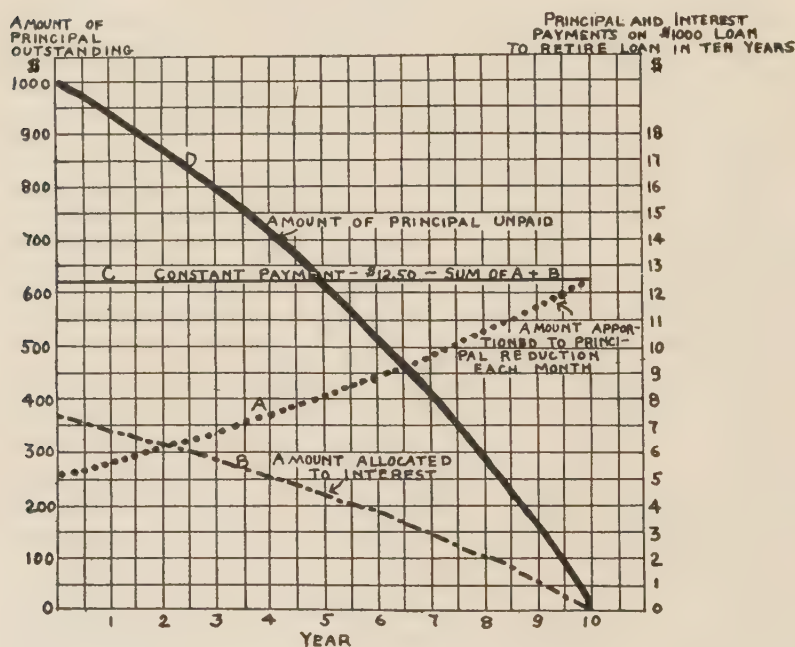
and the West than in the East, provides for monthly payments that cover both interest and principal. Where such a loan is made, interest on the face of the note for the entire period is computed at the specified rate and added to the principal sum. Monthly payments are then adjusted in such a way that at the end of the period the entire sum, principal and interest, will have been paid. Let us assume, for example, that it is desired to make a \$1,000 loan for ten years at 5 per cent. The entire amount due will be \$1,500, that is, \$1,000 in principal and \$500 in interest. Monthly payments of \$12.50 a month for ten years just equals \$1,500. The effective yield to the investor on such a plan is 8.69 per cent, although the loan is figured at 5 per cent.⁷ The reason for this is that the investor begins to get back his principal as soon as payments start and at no time after the first month does he have \$1,000 outstanding. During the first years of the loan a larger proportion of the \$12.50 monthly payments goes to interest than to principal, but as the loan is reduced the interest payments are reduced, thus increasing the proportion going to reduce the principal. To the borrower, however, his monthly payments remain constant during the life of the loan. The chart on page 566 will illustrate the way in which this plan works out in practice:

The reader will appreciate that it is possible to use this general plan on any one of a number of different bases, depending on the period within which it is desired to retire the principal, the basic rate of interest, and the amount of monthly payment which the borrower can pay. The principle itself remains the same. To the investor a plan of this nature has the advantage of raising the effective yield on his commitment, while depreciation and a fall in values are guarded against by the constant reduction in principal. It has the disadvantage of requiring detailed accounts for principal and interest, and

⁷ Many states have usury laws specifying the rate of interest which may be charged on loans to individuals. The stated rate of interest in the loan does not govern the *effective* rate, as shown above. The real test is, Will the contract, if performed, result in producing to the lender a rate of interest greater than that allowed by law, and is this result intended? Usurious contracts are void and unenforceable in some states. In other states a usurious contract may be enforceable up to the legal rate of interest. It is very important, therefore, that the investor acquaint himself with the usury laws of the state in which he proposes to take mortgages of this kind to see if they conflict with such laws. Corporations cannot plead usury. In some states there are exceptions to usury laws in the case of specified types of loans.

the necessity for reinvesting small sums of money each month. These objections are partly overcome if the amount to be lent on this type of mortgage is large and sufficient new business comes in regularly to use up the monthly principal payments. To the borrower, the plan has the advantage of a rapid retirement of the loan through monthly savings.

Fig. 25.—Chart Showing Application of \$12.50 Monthly Payments to a \$1,000 Loan—5% Interest Added in Advance—Effective Yield 8.69%. Loan Retired in 10 Years.



Details in handling mortgages.—In practice, there are certain details that should be attended to at the time the mortgage is taken. The absolutely essential details are: (1) fire insurance, (2) title insurance, and (3) registration.

Fire insurance.—A sufficient amount of fire insurance should be placed on the property to protect the mortgagor. Where the mortgaged property consists of land only, fire insurance is not necessary. In other cases it is customary to require policies with approved companies at least equal to the amount of the mortgage; otherwise the mortgagee is liable to suffer a serious

loss in the value of his underlying security. (Some lenders require insurance up to the full value of the property, although the mortgage may be only 60 or 70 per cent of such value.) Fire insurance policies should be held by the mortgagee, and attached thereto should be a mortgagee's clause, properly assented to by the company issuing the policy, in which the mortgagee is accepted as beneficiary to the extent that his interest may appear under the mortgage.

Title, search, and insurance of.—It is also important that the mortgagor be assured that he has a proper title to the property in question. This may be determined with reasonable accuracy by a lawyer's examination of the records at the registry office in which records of the land in question are kept. Such an examination will show whether the mortgagor has a clear title, and what liens, if any, are registered against the property. The lawyer's search will probably reveal any obvious defects in the title, but is by no means always adequate. It is far better, where it is possible, to have the title guaranteed by a reputable title company. Such companies issue title policies not only to mortgagees, insuring their interest in the title, but to the owner as well.

It is customary for such companies to guarantee: (1) that the title is marketable; (2) the exact condition of the title in respect to other liens; (3) that all costs in connection with litigation over the title have been paid; and (4) that the title company will protect against any loss that may arise from a defect in the title. The fees charged by such companies are nominal and are paid once and for all when the policy is issued.⁸ The mortgagor is customarily required, when applying for the mortgage, to agree to furnish a title policy, or to pay the necessary legal fees in connection with a title examination.

Registration.—As soon as the mortgage is executed and passed, it should be recorded. This is customarily done at the clerk's desk in the land office in which the land records in question are kept. For this reason, many mortgage transactions are consummated at this office, in order that the registra-

⁸The customary fees for a single policy are one half of 1 per cent of the face value of the policy plus a base fee of \$15 on all policies under \$40,000. For each \$1,000 over this amount the fee is \$2.50 per \$1,000. Where the title company places the loan, the cost of the policy is usually included in the bonus charged the borrower for executing the mortgage.

tion may be effected at once. Failure to record a mortgage does not make it invalid, it is true; but it cannot be held against a third person who subsequently acquires a claim on the property, on the assumption that there was no other lien. In other words, assume that individual *A* has an unrecorded mortgage on a certain piece of property now owned by *B*. *B* is fully aware of *A*'s mortgage, it is true, but decides to execute another mortgage to *C*. *C*, after examining the records, and having no personal knowledge of *A*'s mortgage, finds them to be clear and takes another first mortgage on *B*'s property, which he immediately records. *B*, in the meantime, becomes bankrupt. *A* then finds out that another first mortgage has been placed on the property and properly recorded. His mortgage becomes, in effect, a second mortgage. It is true that *B* acted fraudulently, but this is of no financial aid to *A* if *B* is insolvent. *A*, in fact, suffers, not from *B*'s fraud, but from his own neglect in not recording his mortgage.

Appraisal, importance of, methods of.—Up to this point matters of detail which should be borne in mind when investing in mortgages have been considered. Important as these are, they do not involve the real elements of risk to be found in real estate mortgage investments. The first investment risk, at least from the standpoint of importance, lies in the appraisal on the basis of which the loan is made. It is customary for banks to loan up to 60 per cent of the appraised value of urban property. In the case of farm loans the mortgage is usually restricted to 50 per cent of the value of the land and 20 per cent of the value of the improvements. These limits may be considered as conservative. Nevertheless, it often happens that loans are made up to $66\frac{2}{3}$ per cent or more of the value of the property. Building and loan associations, which loan on residential properties for the most part, frequently grant mortgages up to 75 or 80 per cent of the value of the property, although these associations require borrowers to purchase shares which are held as collateral security and on which monthly payments must be made.⁹ In this way, a substantial monthly amortization is provided for.

The recent development of real estate financing in not a few cases has undoubtedly resulted in floating real estate bond

⁹ Such shares are sometimes called "running" shares as contrasted with "paid-up" shares. Running shares may be purchased by nonborrowers also.

issues in amounts that exceeded the actual costs of the properties financed. In recent disclosures which followed the failure of certain mortgage companies in New York it was brought out that these companies had floated issues of real estate bonds equal to, or in excess of, the cost or fair market value of the property securing the bonds.

Appraisal of real estate for mortgage purposes: general.—Appraisals which are made for mortgage purposes should center on market values. It is true that many different items of value should be considered in the appraisal process: cost of construction, age of building, type and design of structures, land values, neighborhood characteristics, gross and net income from property, adaptability, and the like factors are all important. If the mortgage is to give proper security to the mortgagee, the underlying property must have a market value in excess of the amount of the loan. It may be argued in the case of mortgages on income producing properties that, so long as the derived net income is sufficient to pay expenses and interest, market value is incidental. The answer is that if the honestly derived income from the property is sufficient to meet these requirements, and is permanently established, the property will have a value equal to or in excess of the amount of the loan. But cases have been known where temporary "dummy" tenants, who temporarily pay exorbitant rent to supply a fictitious value for financing purposes, are put in occupancy.

There is no single method of appraising real estate for mortgage purposes that can be established as correct for all the different kinds of real property that exist. For example, the value of store property is often computed on the basis of gross rental; office buildings are appraised on the basis of net income; so are some of the larger apartment houses; but unimproved land may have no present income at all. Likewise, single family houses of the better type are almost invariably purchased and held for residential, not for rental, purposes. The science of appraisal is indeed a subject by itself and all that we can do at this point is to indicate in a general way some of the appraisal methods in common use.¹⁰

¹⁰ For a more complete treatment of the subject of real estate appraisals see Babcock, Frederick M., "The Appraisal of Real Estate," 1926, Macmillan Co., New York.

Appraisal of residential property: comparison of sales prices.—The simplest method of appraising residential property is by inspection and price comparison. That is, the appraiser inspects the property, notes its general characteristics, and compares it with other property similarly situated and constructed, which has recently been transferred or which is on the market at the time the appraisal is being made. Real estate firms that operate in the area in which the property is located generally have a record of sales of similar property. Where no actual sales records are available, it is often possible to approximate the sales price by reference to the revenue stamps put on the deed of properties recently sold.

There are serious objections to this method of appraisal, however, in that no means are provided for an accurate check on all the various items of value that go into the building. For instance, the size of the building, the number of rooms, the room lay-out, the architectural plan, the question of plumbing, the kind of wood used for flooring, the type of heating plant, the roof, the dimensions and location of the lot, the nearness to undesirable structures, the age of the building; these, among other matters, all have their effect on value. The problem of the appraiser is to give proper weight to all these factors.

Separate appraisal of land and buildings.—A more refined method of appraising residential property, therefore, starts with an analysis of land value, to which is added the cost of constructing the improvements less proper depreciation for age and obsolescence. The most accurate basis for land valuation in such cases is the record of recent transfers of land in the neighborhood in question, with proper adjustments for corner locations, and other special factors that may be involved. Land for residential purposes may be valued on a square foot or a front foot basis, although more commonly the front foot basis is used with proper correction for variations in depth and nearness to corners.

There are a number of tables which are commonly used to make adjustments for variation in the depth of lots. In New York, the Davies rule or the Hoffman-Neill tables are frequently employed. In Cleveland the Somers table prevails. In fact, there is a slight adjustment in the tables used in dif-

ferent sections of the country to account for variations in local customs.¹¹

Lots situated on a corner, or one lot in from the corner, are often more valuable than lots situated in the middle of the block. The customary rule is to add to the value of a standard lot facing on a particular street an additional 50 per cent to determine the value of a corner lot. This rule applies more particularly to lots used for business purposes than to those used for residential purposes, although corner locations are often more valuable for residential purposes than are interior lots. The added value in such cases will depend on the local situation, there being no general rule for determining the added allowance to be made.

The matter of plottage value must also be considered in localities that are especially adapted to apartment houses or to large office or commercial buildings. In such areas a single 50 or 100 foot lot may be inadequate for the erection of the best adapted structure. Two, three, or more lots must be combined. By reason of the fact that, in such localities, the larger area can be developed or improved to better advantage there is an added value to lots of proper size. Where there has been a successful grouping of small lots in this way, it is

¹¹ The reader will find complete tables as used in different localities in "Real Estate Appraisal," Chapter XII, 1926, Macmillan Co., New York, by Babcock, Frederick M. The following portions of the Davies, Hoffman-Neill, and Somers rules are given for illustrative purposes:

DEPTH TABLES

(Sample)

<i>Depth in Feet</i>	<i>Davies Rule, New York</i>	<i>Hoffman-Neill, New York</i>	<i>Somers Rule, Cleveland</i>
90	.93849	.94	.9560
95	.96921	...	.9785
100	.99917	1.00	1.000
105	1.02841	...	1.0208
110	1.05698	...	1.0400

Let us assume that the lot to be appraised has a depth of 90 feet, a width of 50 feet, and that the front foot value of standard lot is \$100. If our lot were standard, that is, 100 feet in depth, its value would be \$5,000. The depth being only 90 feet, however, its value according to the Davies rule would be $\$5,000 \times .93849$, or \$4,692.45. Based on the Hoffman-Neill tables its value would be \$4,700, and on the Somers table \$4,780.

customary to appraise the aggregate area by adding to the total of the values of the individual lots a percentage, usually 10 per cent, in order to arrive at the value of the larger plot.

The process of assembling lots also may create a sort of "nuisance" value for one or two of the individual lots in the area of proposed plottage. Thus, where an operator or builder has acquired all but one, or possibly two, of the individual lots necessary for the erection of a properly planned building, he may be compelled to pay a higher price for the remaining parcels. Whereas, such value is often created in situations of this kind, it is dangerous to go very far in using it as a basis for mortgage loans, for, in the event of a change in the builder's plans, there may be a collapse in this so-called nuisance-value.

Methods of appraising buildings.—The next step after valuing the land is to value the improvements thereon. Here the appraiser is immediately brought face to face with the adaptability of the improvements to the lot. In other words, it is very important in appraising buildings to determine whether they constitute an adequate development or improvement for the land. Where the land and improvements thereon bring a maximum rent, or, in the case of residential land, where the type of building (considering cost, architectural layout, and nature of structure) is adapted to the lot, the land is said to be adequately improved. Where the land is adequately developed, that is, where the best adapted structure is on the land, it is safe to add to the land value the estimated cost of the structure less depreciation.

Where the land is not adequately improved, it is necessary to estimate the total value of land and buildings combined by a comparison of the sales prices of other property in the vicinity, or by capitalizing the income from the property. The value of the buildings, independent of the value of the land, may then be determined, if desired, by subtracting from the total value the independent value of the land.

In determining the value of the structures on the basis of construction costs, the appraiser usually works from some unit base, such as the square foot of floor area or the cubic foot of content. The construction cost per square foot of floor area or cubic foot of content will vary for residential properties between the following limits:

CONSTRUCTION COSTS, RESIDENTIAL PROPERTY, 1928

<i>Type of Structure</i>	<i>Square Foot Costs</i>	<i>Cubic Foot Costs</i>
Frame 1, 2, or 3 Family (low grade).....	\$5 - \$6	25c - 30c
Frame, Medium Construction, 1 and 2 Family....	6 - 7	30 - 35
Frame, Single Family, Medium Construction.....	7 - 8	35 - 40
High Grade Frame, Single Family.....	8 - 10	40 - 50
Brick Veneer, Single Family.....	7 - 8	35 - 45
Brick Apartments, Low to Medium.....	7 - 8	30 - 45
Brick Apartments, High Grade.....	8 - 12	45 - 60
Brick, Single Family, High Grade.....	10 - 14	50 - 75

Having prepared the measurements of the building, it is necessary to determine the grade of construction, to select the proper unit cost, and to multiply the total cubic content or square foot area thereby, in arriving at a total cost. From this should be deducted depreciation, if the building is over a year or two old. Costs may easily run over the highest limit in the preceding table; but, where they do, the appraiser should check the demand for high class buildings in the locality in which the property is located.

Appraisal by means of capitalizing rentals.—Residential property may also be appraised on a rental basis, where it is rented, or where it is of a character that may be rented. At the present time, it is customary in many communities to appraise strictly residential property, such as one, two, and three family houses, where no collateral service, such as heat or janitors, is furnished, at 100 times the monthly rental, or at 8.33 times the annual rental. This is equivalent to capitalizing gross rentals at 12 per cent. In the case of new structures, where repairs and upkeep are low, a 10 per cent rate of capitalization is sometimes used. The rate to apply in a given case, however, will depend largely on local conditions.

In the case of apartment properties, where heat and janitor service are furnished, it is necessary to use a higher rate of capitalization. A rate between 15 and 20 per cent is customarily used in such cases to capitalize the annual gross rental into a value. This gives weight to the added expense of furnishing heat, janitor service, added expenses for repairs, and the like.

The use of the capitalization method for appraising property is not recommended as highly accurate. In the first place, old structures may rent at relatively high figures, yet be almost

worthless as buildings. Furthermore, it is necessary to make proper adjustments for vacancies and loss in collections in arriving at gross revenues. The capitalization method of appraisal in respect to real estate is recommended as a check rather than as a definite and independent method, except where other means of ascertaining values are lacking.

Analysis of appraisal card.—The card opposite was designed by the author for use in appraising residential and apartment house properties for loan purposes. It is not aimed to provide for a complete analysis but rather to suggest a method for recording and weighing the more important factors that should be considered by the appraiser when making valuations for mortgage purposes.

It will be seen that three bases of appraisal are here provided for. It is always possible, in the case of new properties that are adapted to the land on which they are built, to work out the appraisal on two bases, and, where the property is rented, the capitalization method is available as well. Under the floor area basis, the preceding appraisal card provides for a somewhat more detailed analysis than was previously suggested, in that the structure is valued exclusive of heating plant and bath rooms. An allowance is then made for these items which is added to the total figure. Where this is done a slightly lower unit square foot basis may be used than would be used otherwise. In this way, special consideration can be given to the presence of oil burners, tiled bathrooms, extra bathrooms, and so forth.

Appraisal of business property.—The valuation of business property is a profession in itself and should be undertaken only by one who is thoroughly familiar with the locality in which the appraisal is being made. The basic principles, however, are much the same as in the case of residential property. Where the site is adequately improved, it is possible to find the combined value of the property by appraising the land according to sales of similar lots in the neighborhood and to add thereto the cost of the building less depreciation. As a check against the results obtained by this method, it is possible to capitalize rentals, gross and net. Store properties in growing localities generally sell for from 8 to 10 times their gross rentals. Loft buildings, from 5 to 7 times their gross rentals, and high grade office buildings on about the same basis as loft

Fig. 26.—Specimen Form—Real Estate Appraisal Card.

FRONT

APPRAISAL FORM Loan No. _____


LOCATION OF PROPERTY 26 GRANT AVE
NEWTON, MASS.

TYPE OF STRUCTURE SINGLE - 2½ STORIES -
½ BRICK - HIGH GRADE CONSTRUCTION

CHARACTER OF NEIGHBORHOOD HIGH GRADE

TRANSPORTATION GOOD

FLOOR PLAN



ROOF SPECIFICATIONS Cupola Shingles OUTTERS Copper 22 Mod.

OUTSIDE STRUCTURES

DESCRIPTION 2 CAR FRAME

ESTIMATED VALUE \$900.

LAND AREA 8,700 S.F.S.

FRONT FOOTAGE 67 DIMENSIONS 67 X 130 1/2 PER FOOT BASIS 75 ft.

TOTAL VALUE 6,750

CUBIC CONTENT

BUILDING	CUBIC
2½ STORIES 25 35 32 2800	
Extension 10 15 10 1500	
	29500

CONTENT X BASIS 17,900

OUTSIDE STRUCTURES 900

LAND GRADING 750

TOTAL 26,550

BASES PER CUBIC FOOT 60¢

VALUE COMPUTED ON BASIS FLOOR AREA

ROOMS AND FLOORING	SQ. FT.	EST. VAL.
Living Room 24 12 288		
Sun Parlor 10 16 160		
Dining Room 15 16 240		
Kitchen 16 12 192		
Bed Room 10 12 120		
" " 14 15 210		
" " 18 13 234		
Third Floor		240
Floor all		
15' wide		
Whole lot		
TOTAL		1734

HEATING PLANT: RICHARDSON

ESTIMATED VALUE 1,000

BATH ROOMS AND PLUMBING

Tile Baths

Toilet

ESTIMATED VALUE 800

AREA X BASIS 15,600

HEATING PLANT 1,000

BATH ROOMS 800

OUTSIDE STRUCTURES 900

LAND 600

GRADING 1,000

TOTAL 26,050

LESS DEPRECIATION

ESTIMATED SQUARE FOOT BASIS 9¢ APPRAISED VAL. 26,050

VALUE COMPUTED ON BASIS RENTAL

MONTHLY RENTAL

FLOOR 1

2

3

TOTAL

MONTHLY RENTAL

CAPITALIZED VALUE

USE 100 EXCEPT WHERE HEAT IS FURNISHED, THEN 70

REVERSE

PRESER. OWNER FRANK JONES

NAME OF MORTGAGOR SAME

ADDRESS 26 GRANT AVE. NEWTON, MASS.

OCCUPATION ACCOUNTANT - CREDIT A

PRESENT MORTGAGE 16,000 CONSTRUCTION

APPRAISALS RECOMMENDED

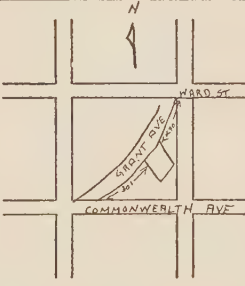
AMOUNT	BY
<u>26,500</u>	<u>BADGER</u>
<u>27,000</u>	<u>BROWN & CO.</u>
<u>28,000</u>	<u>OWNER</u>

LOAN APPROVED FOR \$15,500

BY NWB

DATE OF INSPECTION July 11, 1927

MAP



PROPERTY APPRAISED



STREET VIEW

buildings. High grade business property sells anywhere from 15 to 25 times net rentals, depending on the rapidity of growth in the community and the chance for capital gains in land values.

Where the property is inadequately developed, a different problem is involved. It may be possible to capitalize the income of the property in order to ascertain its value, but the capitalized value should more than equal the land value. Otherwise, the present structures must be considered so poorly adapted to the site that they are worthless. In such a case, unless the existing buildings can be materially improved, it would pay to tear them down and erect new ones that better utilize the land. Where this situation exists the prospective mortgager should consider only the land value present.

On account of the experience and care required to make an accurate appraisal of business property, the investor who contemplates loans of this character will do well to employ the services of a reputable and conservative firm, familiar with local values, and to rely on the report of such a firm.

Tax values not reliable.—The tax value of property rarely has any significance in real estate appraisals. The practice of assessors in valuing property varies in different cities as well as in the same city at different times. It frequently happens that the amount of tax which a municipality pays to the county or the state in which it is located depends on the relation which its total assessed valuation bears to the total for the county or the state. Accordingly, the local assessors are inclined to assess property within the local area at from 50 to 75 per cent of its true value, and to raise the local tax rate in proportion. The local property owner pays no greater total amount, while the city's contribution to the county or the state is correspondingly reduced. In any event, no reliance can be put on assessed valuations when appraising property for mortgage purposes.

Causes for declines in real estate values: neighborhood changes.—Since it is the sales value of the property in relation to the amount of his mortgage that interests the mortgagee, it is important for him to consider, not only the present value of the mortgaged property, but such changes in value as may occur during the term of his mortgage. It may happen that the neighborhood in which the property is situated is declining. This is, indeed, a matter that should be carefully

noted at the time the mortgage is taken, for values may be rapidly affected by the extension of certain types of industry, by changes in the character of population, by changes in means of transportation, or by the opening up of new residential areas.

The business cycle.—Another type of risk to which the mortgagee is subject arises from the fluctuations of the business cycle. At the present time, building costs are substantially above those prevailing in 1913. In fact, during the middle of 1927, the Bureau of Labor Statistics shows that the cost of building materials was about 175 per cent of 1913 prices, having come down from a high point in April, 1920, of 300 per cent. Just what the future holds in this respect is uncertain. It is unlikely that we will have an immediate return to 1913 prices. On the other hand, it is possible that a severe depression in the building industry may take place in the next five years, during which values may decline to rather low points. The fact that alternate periods of rising and falling prices exist under our present economic régime, coupled with the tendency to overbuild during periods of easy money and advancing prices, makes it necessary for the investor in mortgages carefully to follow the trend of economic conditions. Appraisals should be made on a more conservative basis and loans restricted during the later stages of a building boom. It is particularly true at such times that the older buildings represent the poorest types of property on which to lend, because of their rapid depreciation in value, caused by the competition of modern structures. For this reason, the most conservative real estate mortgages, particularly at present (1928), are those secured: (1) by new residential property with modern conveniences and situated in a well adapted neighborhood; (2) by up-to-date apartment houses, well constructed and situated; or (3) by modern business structures on sites that are well adapted to their intended use.

Methods of safeguarding mortgage loans.—Once the investor has acquired a mortgage, his work is by no means ended. It is highly important that he reappraise the underlying property at periodic intervals, preferably as often as once a year, in order to make sure that the owners keep it in a proper state of repair and that neighborhood changes are not developing to jeopardize values. Where the mortgage requires annual

payments on the principal, the mortgagee can be less strict in the matter of reappraisals.

It is also important that an annual check be made to see that all taxes and local assessments are properly paid. Such obligations constitute a prior lien on the property, preceding even the first mortgagee's claim. In most states, real estate can be sold for unpaid taxes after legal notice of the proposed sale is given; but the owner or mortgagee is given a period in which to redeem by payment of the tax plus additional expenses. In order to prevent such a sale, the mortgagee should make an annual check to make sure that taxes have been properly paid.¹² Such a check may be made by requiring the mortgagor to show his tax receipt at the time of his interest payment following the assessment of taxes, by checking with tax collector's records, or by following the sales of titles for delinquent taxes.

It has already been suggested that the mortgagee should keep in his possession adequate fire insurance on the property to cover his mortgage, and that notice of his interest as mortgagee should be indorsed on all policies. It is necessary to keep an adequate record of this insurance in order to guard against any lapse in the policies. This is usually done by means of a tickler file, in which a notice is placed for each mortgage, showing the earliest date at which any of the policies held in connection therewith expire.

Second mortgages: general characteristics.—Second mortgages on improved urban real estate are becoming somewhat more common and frequently offer excellent investment opportunities. Their attraction lies in the higher rate of interest they command. The interest rate on such mortgages customarily is 8 per cent, while various service charges are required running from 5 to 15 per cent of the face value of the loan. A plan at present used in some eastern cities in handling second mortgages provides for a 5 per cent bonus, 8 per cent interest payable semiannually in advance, and 2 per cent payable on principal each month. In this way the entire loan is paid up

¹² In some localities, it is customary for the tax collector to notify the mortgagee in writing of his intention to sell the property, thus giving the mortgagee an opportunity to pay the tax and start foreclosure. In other cases, legal notice of the proposed sale consists of newspaper advertising and the posting of a notice of sale at some public place.

in 50 months.¹³ The details involved in second mortgages are much the same as in first mortgages. A proper title examination or policy, fire insurance, and recording of the mortgage are necessary. In respect to appraisal, it is apparent that the same or greater care is necessary. The rapid retirement of the loan, however, offers excellent protection against the various losses in value that were discussed in the case of first mortgages. On the other hand, it must be recalled that the second mortgagee's position is below that of the first mortgagee. The former's position, in case of default, will depend to no small extent on the willingness of the first mortgagee to renew the loan with the second mortgagee as a new owner, if the latter is required to bid the mortgaged property in to protect his equity. This is especially true if the property does not bring, at the mortgagee's sale, enough to cover both mortgages. Accordingly, it is important for the second mortgagee to know the first mortgagee, and to have sufficient cash to protect his equity in case of default in the first mortgage.

The "split mortgage."—Certain companies which specialize in mortgage investments do a second mortgage business by means of the so-called "split mortgage." This device provides for taking a first mortgage which is equal to the first and second mortgage combined. For example, the borrower, instead of executing two mortgages, a first equal to 60 per cent of the appraised value of his property and a second equal to 15 per cent of the value, will execute one mortgage equal to 75 per cent of the value of the property. The rate of interest on

¹³ Without going into the mathematics of the problem, it is apparent that the effective yield is over 10 per cent on this plan. In view of the fact that the entire loan is liquidated within about four years, we may assume that the *total* amount involved is outstanding only two years. The 5 per cent bonus is thus equivalent to about $2\frac{1}{2}$ per cent per annum. Furthermore, the lender never has out the entire amount on which he collects interest. In fact, he will have out at the beginning of the first 6 months on a \$1,000 loan only \$910 (\$1,000 less 4 per cent interest and 5 per cent bonus), at the end of the first 6 months he will have out only \$790, \$20 having been paid on principal each month. He has received \$40 interest, therefore, on an average amount outstanding of \$850.

His effective yield, exclusive of the apportioned bonus, is, therefore, $\frac{40}{850}$, or 4.706 per cent semiannually. This is equivalent to 9.41 per cent annually, to which we must add approximately $2\frac{1}{2}$ per cent on account of the bonus. This gives us a total yield of nearly 11.91 per cent. Mathematically the yield would be slightly less than this, because the lender is required to wait until nearly the end of the loan before he begins actually to receive his bonus in cash.

this loan will be somewhat higher than it would be on a 60 per cent loan, to be sure, but need not exceed the combined charges on a first and second mortgage. We will assume that 7 per cent is the rate charged. The mortgage company then sells an equity in the loan up to 60 per cent of the appraised value of the property at, say, a $5\frac{1}{2}$ per cent rate of interest, and retains the 15 per cent portion. In this way the company "doubles up" on the interest it receives on the more hazardous portion of the loan and shows a high return on capital invested.¹⁴

Leasehold mortgages.—During recent years the practice has developed of mortgaging property erected on leased land. While the principle of leasehold mortgages may be sound, if the proper safeguards are followed, they are not, as a class, to be compared with mortgages on property owned in fee. In the first place, it is difficult to place an accurate value on any particular leasehold. In the second place, it must be recalled that the rentals paid under the terms of the lease constitute a first claim against all earnings of the property, after taxes have been paid (unless the lessor joins with the lessee in executing the mortgage). In other words, the lease may be said to constitute a first mortgage, whereas the first mortgage on the leasehold and buildings actually becomes a second mortgage. Furthermore, it is customary for the lessee to agree to pay not only the annual ground rent named in the lease, but also all taxes on the property (except inheritance and income taxes). The present tendency for property taxes to increase thus creates a growing burden against the property which must be met before interest and amortization payments on the first mortgage can be taken care of. Moreover, all increases on land values accrue to the lessor, and, since only the lessee's interest can be foreclosed, the security behind a leasehold mortgage does not increase in proportion to the increase in the value of the land.

¹⁴ In order to show how this plan works out in actual practice, let us assume that a piece of property is appraised at \$10,000 and that a \$7,500 loan is placed at 7 per cent. A \$6,000 equity in this loan is sold at $5\frac{1}{2}$ per cent, the seller holding the balance. The profit on the last equity of \$1,500 is as follows:

Total Interest (annual basis) . . .	\$525.00
$5\frac{1}{2}\%$ on \$6,000	330.00
Balance	\$195.00
Yield on \$1,500	13% (exclusive of any bonus or placing charge)

Safeguards in leasehold mortgages.—The development of this type of financing has been most pronounced in our larger cities, where land values have risen to high levels. The problem of raising the capital necessary to erect a large office or commercial building is partially solved, if the promoters are able to effect a long term lease of the land. On account of the inherent weakness of mortgages secured by leasehold property, however, it is important for the investor to insist here on very strict safeguards in connection with the drawing of the lease. In the first place, the lease should run for a length of time sufficient to enable the complete retirement of the entire mortgage before the expiration of the lease. Many such leases run for 99 years, although frequently the duration is for a shorter period, say 21 years, with a renewal clause inserted, which gives the lessee the privilege of extending the lease under certain conditions. The length of the lease will, of course, determine in part the rate at which the mortgage should be amortized. It has already been suggested that the entire loan should be paid off before the lease expires, if the mortgagee is to be given adequate protection.

While it is true that leasehold mortgages are less desirable than mortgages on property owned in fee, it should not be assumed that all leasehold mortgages are undesirable. Where the terms of the lease are equitable, where there is a large equity in the property following the leasehold mortgage, or where the property is apt to increase, rather than decrease, in value, the leasehold mortgage may be adequately secured and thus provide an excellent medium for investment.

Bonds secured by real estate mortgages: the single mortgage bond.—A logical development of real estate mortgage financing is the issuance of bonds secured by such mortgages. The reasons for such development are many. In the first place, it must be recognized that real estate mortgages, despite their inherent safety, have certain drawbacks. They are not marketable in the accepted sense of the term, and, hence, lack liquidity. Furthermore, they involve loans of varying sums, which may or may not be convenient to the lender. There is also a substantial amount of detail involved in the actual handling of real estate mortgage investments. Finally, the growing size of loans necessary to finance large office buildings, apartment houses, and hotels has made it necessary to find some means of dividing up the loan. In order to offer investors the

advantages of real estate mortgage investments without their inherent disadvantages, companies have been formed which execute mortgages on real estate, deposit them with trustees, and issue bonds thereunder in much the same way that first mortgage bonds are issued by railroad, public utility, or industrial companies. The security behind these bonds consists of a first mortgage on one large building, yet the bonds may be issued in different denominations and with varying maturity dates, in order to meet the requirements of many different types of investors.

Importance of accurate appraisals.—In analyzing the investment merit of bonds issued against the deposit of a single large mortgage, about the same matters should be considered as were suggested in connection with individual real estate mortgages. The matter of appraisal is of vital importance. It is usually impossible for the bondholder himself to make the appraisal. This makes it necessary for him to rely on the judgment of one or more firms or individuals who specialize in this kind of work. It is customary for the firm which undertakes the sale of the bonds to have independent appraisals made by one or more responsible real estate or appraisal firms who are in a position to know property values in the neighborhood in which the building is located, as well as construction costs. A conservatively financed proposition will provide for a first mortgage bond issue not in excess of 60 per cent of the appraisal value of the property. It is likewise important to compare interest and amortization charges with estimated net rentals. Here one would expect net income to equal at least two times charges. The importance of earnings in relation to charges is apparent, when one considers that, after all, it is the earning power of such property that determines its real value. If the property is unable to earn enough in the hands of its original owners to provide for interest and amortization charges, it is unlikely that the situation can be materially improved under different ownership. If this is true, one may expect little or no relief from foreclosure proceedings in case of default.

Mortgages on large commercial buildings, elements of risk in bonds secured by.—In the case of large mortgages of this kind, there are elements of risk not found to the same extent in smaller mortgages on strictly residential property. In the

first place, the desirability of erecting an office building, a hotel, or other commercial building on a given site is a matter that can be predetermined only on the basis of rather accurate judgment. Regardless of the cost of the structure, therefore, it is necessary that the actual operation of the building prove its suitability to the site and bear out the estimates of its promoters by returning a satisfactory operating profit. Otherwise the mortgage bonds issued thereon can hardly be considered a satisfactory investment regardless of original costs. Furthermore, subsequent changes in the character of the business community may at any time reduce the earning power of the building and thus impair the bondholders' equity.

During recent years, there has been a tendency for speculative promoters to erect office and commercial buildings in the larger cities and to finance such operations by issuing first mortgage bonds up to nearly 100 per cent of the original cost of the enterprise. Such bonds have been sold by houses interested in the immediate profits derived from their sale, rather than in the ultimate success of the enterprise. Of course, the appraisals submitted to the purchasers of the bonds are always higher than actual cost, since they are frequently based on anticipated rentals. The mere fact that the bond is labeled a "real estate" bond has facilitated its sale and has encouraged operations of this kind. It is, of course, rarely possible for the investor personally to check up the appraisal. For this reason, it is highly important for him to consider carefully the experience and qualifications of those sponsoring the enterprise before purchasing bonds of this type.

Bonds issued against leasehold mortgages.¹⁵—Where the building itself is to be erected on leased land the proposition requires even closer scrutiny. The general characteristics of leasehold mortgages have already been discussed. It was seen that the first mortgage in such cases is in practice but little better than a second mortgage, in that all payments thereunder are subordinated to payments under the lease. The security which attaches to land in the case of mortgages on property owned in fee is substituted by the leasehold, which may prove of doubtful value. On the other hand, it should not be inferred that all leasehold mortgage bonds are poor.

¹⁵ See "Leasehold Bonds and Foreclosure as a Protection," by Irving Allen, *Analyst*, July 16, 1926, p. 76.

While they undoubtedly are inferior as a class to bonds secured by mortgages on property owned in fee, there may be adequate security behind the leasehold mortgage, especially where the leasehold itself has a value and extends over a sufficient period, and where the amount of the loan is conservatively limited.

Provisions for early retirement, advantages of.—In order to overcome the greater risk found in the case of large mortgages, it is the practice to insert in the mortgage indenture provisions calling for rather rapid amortization of the principal. This may be done either through annual payments into a sinking fund or by arranging for the issue to mature serially. The following chart will show the way in which this matter has been provided for in selected instances:

PROVISIONS FOR AMORTIZATION FOUND IN INDENTURES SECURING REAL ESTATE BONDS *

<i>Name of Issue and Maturity</i>	<i>Original Amount</i>	<i>Appraised Value</i>	<i>Sinking Fund Provision</i>
Ambassador Hotel Corp. (N. Y.) 1st 6's due 1936.....	\$6,500,000	Unavailable	Serial. Entire issue retired by maturity.
American Insur- ance Union Bldg. (Columbus, Ohio) 6's due 1941.....	3,800,000	\$7,863,278	Partially serial. Sinking fund begins Oct. 1, 1928, 10% of annual net earnings up to \$250,000, 20% of excess.
Broadway Motors Bldg. Corp. (Gen- eral Motors Bldg., N. Y.) 6's lease- hold bonds due Feb. 1, 1948.....	6,000,000	10,370,000	Monthly sinking fund. Starts Nov. 1, 1927, sufficient to retire entire issue by maturity by purchase or call.
Park Lane Corp. (N. Y.) 6½'s, due 1943	1,750,000	3,901,000	Sinking fund. Begins June 1, 1926, sufficient to retire entire issue by purchase or call at not exceeding 105.
Pennsylvania Op- erating Corp. (Penn. Bldg., N. Y.) first fee sink- ing fund 6's due May 1, 1939.....	4,000,000	Unavailable	Annual sinking fund. Begins May 1, 1926, sufficient to retire \$1,500,000 of bonds by maturity by purchase or call at not exceeding redemption price.

* The reader will find a more complete description of most of the more important real estate bonds in Moody's "Manual of Investments," "Industrials," 1927, p. 2823 ff.

The typical real estate bond secured by a single mortgage on a commercial building usually runs for not more than twenty years and, except where secured by property owned in fee, is protected by sinking fund or serial provisions that assume substantial retirement at maturity.

Real estate bonds issued by mortgage companies.—Still another type of real estate bond is that issued by so-called mortgage companies. Real estate bonds issued by such companies differ materially from those secured by a mortgage on a single unit, in that the former are secured by the pledge of a number of smaller mortgages on residential or less pretentious business properties, which have been acquired by the mortgage company and turned over to a trustee. That is, the mortgage company proceeds to lend money on such applications as it receives in much the same way as the savings bank or the individual operator. As it uses up its available funds in this way, it turns a group of mortgages over to a trustee to be used as collateral against an issue of bonds. Such bonds, therefore, are secured by a diversified lot of first mortgages, which are owned by the mortgage company, but which are hypothecated with the trustee as security for the bond issue. The bonds, while secured by these mortgages, nevertheless, are obligations of the mortgage company.

Diversity in underlying mortgages, advantages of.—The most obvious advantage of this type of bond is the fact that the underlying collateral is highly diversified, the amount involved in any one mortgage, therefore, being relatively small.¹⁶ A mistake in judgment or an occasional overappraisal is thus a relatively insignificant matter. Furthermore, such companies frequently operate in many different cities, even extending their operations over different states. In this way excellent geographical diversification is likewise secured. Some idea of the extent to which a geographical distribution of risk is effected by the larger mortgage companies may be had from the following table showing for the Mortgage Security Corporation of America the approximate amount of mortgages originating in various states:

¹⁶ The average amount loaned per mortgage by the Mortgage Security Corporation of America in 1925 was approximately \$6,000, whereas real estate gold notes to the extent of \$13,353,000 were outstanding December 31, 1925.

DISTRIBUTION OF MORTGAGES HELD BY MORTGAGE SECURITY CORPORATION OF AMERICA, MARCH 1, 1926

Alabama	\$91,300	Missouri	\$140,000
Arkansas	79,273	Montana	3,300
California	910,730	North Carolina	1,614,600
Colorado	97,700	New York	7,500
District of Columbia.....	600,000	Ohio	561,200
Florida	836,200	Oklahoma	219,200
Georgia	1,018,400	Oregon	34,100
Illinois	713,900	South Carolina	162,800
Indiana	43,600	Tennessee	862,000
Iowa	22,500	Virginia	604,100
Kentucky	435,300	West Virginia	3,671,800
Minnesota	1,814,700	Wisconsin	34,500
Michigan	497,000		

Security to bondholders, how provided.—Another element of security found in the real estate bonds of such companies is the fact that the stockholders have their own investment in the business, which protects to some extent the position of the bondholder. The December 31, 1925, balance sheet of the Mortgage Security Corporation of America will serve as a basis for discussion. At this time the company carried its capital stock and surplus account at \$2,241,656, while total bonds and notes outstanding amounted to slightly under \$14,000,000. A substantial number of defaults in underlying mortgages would have to occur in order to dissipate entirely this protecting equity. If the company restricts its loans to 50 or 60 per cent of a conservative appraisal value of mortgaged property it is unlikely that such wholesale defaults will occur.¹⁷

Guaranty by surety companies: customary forms.—A still further protection is often given the holders of such bonds in the form of a guaranty or an indorsement by a surety company. The National Surety Company and the Maryland Casualty Company, among others, have recently been active in this type of business. The additional guaranty of the surety company may be affected in one of two ways: either the company indorses and guarantees the payment of principal and interest when due on each underlying mortgage deposited with the trustee, or it guarantees the certificates as issued by the mortgage company. The first plan has been adopted by the Mort-

¹⁷ On the other hand, these companies usually have their capital invested in mortgage loans in the locality in which they operate, which results in a certain concentration of risk.

gage Company of Maryland. Here there is a provision in the indenture under which the bonds of the Mortgage Company are issued providing that "there shall also be delivered to the trustee for each and every one of said mortgages, a Surety Bond of the Maryland Casualty Company in favor of the Trustee, guaranteeing the payment of both the principal and interest thereof; said Bonds shall be executed by the Company and the as joint principals and shall be in substantially the following form."¹⁸ We shall not recite here the full form of guaranty. It is sufficient to say that the Casualty Company guarantees the full payment of principal and interest when due on each mortgage deposited with the trustee. In other words, the Casualty Company does not, in this case, guarantee the bonds of the mortgage company, but the collateral underlying such bonds.

In the case of the Mortgage Security Corporation of America the form of guaranty used is somewhat different. Here the National Surety Company places its unqualified guaranty on every insured mortgage certificate issued, in the following form:

FOR VALUE RECEIVED, the undersigned Company hereby guarantees to the legal holder hereof the payment of this Certificate and also the payment of all interest payments due thereon as the same fall due, without necessity of recourse to the Trust Indenture securing this Certificate or to the primary obligor, upon condition that at the option of the undersigned it is to be allowed eighteen (18) months from the date when this Certificate becomes due within which to pay the principal amount, but with interest in the meantime semiannually at the rate named in this Certificate.

This guaranty, made, executed and delivered by National Surety Company at its home office, 115 Broadway, City, County and State of New York.

IN WITNESS WHEREOF, NATIONAL SURETY COMPANY has caused this guaranty to be signed in its name by a Vice President and its corporate seal to be hereunto affixed and duly attested, at the City of New York, State of New York, the day of, 19—.

NATIONAL SURETY COMPANY,

Attest:

.....

By.....

Assistant Secretary

Vice President

¹⁸ Assignment and deed of trust, dated June 1, 1925 (securing an issue of first mortgage five and one-half per cent bonds, certificate series No. 4).

There is some question as to which of these two methods of guaranty offers the best protection to the security holder. In practice, there is probably little choice one way or the other. The form of guaranty used by the Mortgage Company of Maryland has the advantage of requiring the Casualty Company to assume many small risks, as compared to one large risk, for a separate policy goes with each underlying mortgage. Furthermore, this method undoubtedly keeps the insurance company in the closest touch with the type of mortgages assumed by the Mortgage Company. Any substantial number of defaults will immediately come to the attention of the Mortgage Company. The plan adopted by the Mortgage Security Corporation, while it appears to offer greater security, in that the certificate holder looks directly to the Surety Company in case of default, nevertheless requires the Surety Company to assume a large individual risk, and does not require, *per se*, any attention on its part until a default in the entire issue has occurred. The logic of the situation appears to favor the plan adopted by the former company.

Sale of individual mortgages by mortgage companies.—There are a number of New York and New Jersey companies which issue certificates secured by real estate mortgages in much the same way as those issued by mortgage companies, and also sell guaranteed first mortgages. This practice is followed also by other mortgage houses operating in some of the larger cities, although not all such houses guarantee the mortgages they sell. According to the plan adopted by companies doing this type of business first mortgages are acquired directly from mortgagors, together with the customary mortgagor's note or bond, title policy, and fire policy. The company generally, although not necessarily, searches the title and issues its own title policy. The mortgage is then assigned to the purchaser together with the mortgagor's bond, and title policy, and the guaranty of the mortgage company in respect to both the principal and the interest of the mortgage. The fire policies are generally held by the company guaranteeing the mortgage. It is arranged that the payments due under the mortgage shall be made by the mortgagor to the company. The company, as payment for the guaranty, deducts one half of 1 per cent of all interest payments before turning the proceeds over to the investor who has purchased the assigned

mortgage. The advantages of this method lie in the relief which the investor is afforded in the matter of detail. At the same time he has an actual individual mortgage, such as he would have had had he entered the mortgage market with his own funds.

Value of real estate mortgage bonds, how determined.—

It is impossible to say very much about the technique to be followed in testing the inherent soundness of the bonds of mortgage companies. Outside the obvious requirement that such companies should have a combined capital and surplus of about 10 per cent of bonds outstanding, but little can be determined from the balance sheet. The real test of the company's collaterally secured bonds lies in the type of underlying mortgage. If the mortgages are conservative and do not exceed 50 to 60 per cent of the real value of the mortgaged property then the bonds of the mortgage company must inevitably represent the highest type of investment. In quest for more mortgages, and especially for rates of interest on underlying mortgages in excess of those which their own bonds bear, the mortgage company is constantly tempted to take mortgages that are not entirely desirable. It should be noted that the mortgage company must receive on its own loans from $\frac{1}{2}$ to 1 per cent over that paid on its bonds, in addition to the one half of 1 per cent which goes to the surety company for its guaranty. Behind a 6 per cent bond, therefore, one may rest assured that the underlying mortgage loans were placed at from 7 to 8 per cent. This means that the mortgage company has been forced into newly developed areas or into loans not of the highest grade. What applies to the 6 per cent bond applies with more force to the $6\frac{1}{2}$ or 7 per cent bond. With this in mind a careful check should be made of the character and the abilities of the men who are in charge of the mortgage company. One of the real advantages accruing from the guaranty of a casualty company is the assurance that it has given some attention, at least, to the type of mortgage taken by the mortgage company.

Building or construction loans, nature of.—Building or construction loans, as the term implies, are loans undertaken for the construction of a new building. The customary plan of procedure here is for the owner of the building, or the borrower, to arrange with the lender for an agreed amount. A

mortgage is immediately placed on the premises to secure the advances to be made under the loan agreement. The entire sum is not paid at once, but advances are made from time to time as construction progresses. Ordinarily three payments will be made, one when the frame is up and the roof on, the other when the rough plastering and plumbing are finished, and the third when the building is completed. The amounts of these advances are so computed as to assure the lender that the borrower will have at all times a proper investment in the property. In order to make sure of this, payments may be based on architect's or contractor's certificates, which certificates are based on an actual inspection of the property, and on vouchers shown for material and labor which have gone into construction.

The best protection that can be given to the lender in construction loans is the existence of a contract calling for the construction of a building at a specified price, and under which the contractor agrees that, in return for the total payment, he will complete the undertaking in accordance with the plans and specifications. This assures the lender that the owner is in a position to make his investment in the undertaking and furnishes evidence as to the actual cost thereof. In arrangements of this kind it is necessary that the contractor furnish a bond for the performance of his contract. Thus are all parties concerned protected against any default on the part of the contractor arising through unforeseen difficulties, such as excessive costs, bankruptcy, and the like.

Risks of mechanics' liens, provisions against.—The detail involved in handling construction loans is rather complex. The most important matter to be guarded against is the matter of mechanics' liens. Those who furnish materials and labor entering into the construction of a building are entitled to liens on the property to secure the payment of amounts due them. The legal status of such claims, especially their priority over mortgage liens, varies widely. In most states protection is afforded the mortgagee if his mortgage is recorded before any work is done on the building. Where this is not done, however, it is important that no payments be made by the first mortgagee on construction loans until he obtains releases from contractors who have furnished materials or labor. The technique involved here is complex, and,

where it can be arranged for a title company to handle payments, it is better to do so. Otherwise construction loans are not entirely desirable for those lacking experience in construction loan technique.

Land trust certificates.—Another type of real estate investment which has recently come into prominence is the land trust certificate.¹⁹ The legal structure on which this type of investment is based is relatively simple. It is customary for the fee title to a given parcel of land to be leased for a long period. The legal title, subject to the lease, is then conveyed to a trustee under an indenture or deed of trust which states that the trustee shall hold such title for the benefit of certain certificate holders.

Under the trust agreement the equitable ownership of the land is divided into a number of equal parts and the trust certificate is issued showing the number of parts owned by the individual holder. The actual ownership of the land is, of course, subject to the right of the leaseholder, who continues in possession so long as he pays the stipulated rent. In some cases there will be a term in the lease providing that the lessee may purchase the land outright at a price which will show a profit to the certificate holders. This feature has the advantage of avoiding an excessively long investment and at the same time provides opportunity for an additional profit.

In case the lessee fails in any of the covenants of the lease, the equitable owners of the land, that is, the certificate holders, may eject him and thus come into possession of what may prove to be a valuable piece of real estate, especially if it happens that the lessee has erected buildings on the leased land. From the certificate holders' angle, therefore, it is desirable that some sort of development be undertaken on the land. It may, in fact, be made one of the conditions of the lease that, within a specified time, improvements shall be made. It will be noted here that the real danger in case of default falls on the first mortgage bondholders who have a leasehold mortgage on the improvements. The position of the lessee, or certificate holders, in the case at hand, thus underlies that of the bondholder.

¹⁹ See "The Land Trust Certificate—A New Development," by Irving Allen, *Analyst*, August 6, 1926, p. 171.

The question of appraisal is of course important in the case of land trust certificates, although the dangers of overappraisal are somewhat limited by the presence of the lease. In fact, the dangers of overappraisal to the certificate holder are much less than in the case of the mortgage bonds. If the lessee has agreed to undertake the payment of an annual rental sufficient to provide a return of from 5 to 6 per cent on the certificates issued under the lease, and if he has proceeded to finance a structure on the land through the issue of leasehold bonds, it is at once apparent that the entire question of an appraised value for the land has been somewhat subordinated. A slight error in the direction of overappraisal is of course thrown over on the owners of the building or on those who hold the leasehold bonds.

Perhaps the greatest danger to the holders of land trust certificates lies in the failure of the lessees to start the erection of buildings on the land within a reasonable period, as sometimes provided in the lease, or in their failure to complete the project. This risk, however, can be partially eliminated by having the lessee deposit funds for the cost of construction with a trustee, such funds to be disbursed as the building is erected. Where this is not done, there is the possibility of the certificate holders finding themselves in possession of land with no immediate earnings.

The land trust certificate,²⁰ although by no means a new

²⁰ During the year 1927 the following issues of land trust certificates at least deserve mention as indicating the growing interest in this type of investment. They will also serve to illustrate some of the features already discussed in a general way.

1. Michigan Office and Theater Building.—This building, which is located at the corner of Middle and Clifford streets and Bagley Ave., Detroit, Michigan, was financed in part by the issue of 4,500 equal undivided shares of ownership in the fee simple title to the land to be occupied by the building as well as certain adjoining land. These certificates were sold at \$1,000 each and were entitled to \$55 interest per annum. The total rental under the lease executed between the trustee and the Detroit Metropolitan Company provided for the payment of all taxes and \$247,500 annual rental. The land had an appraised value of \$4,645,960. The land and buildings combined had an appraised value of \$8,157,783. Net income available for ground rent charges under the lease was *estimated* at \$468,519, against charges of \$247,500. Certificates were sold on a $5\frac{1}{2}$ per cent basis. Under the terms of the lease the lessee retained the option of purchasing the entire property by paying to the trustee an amount sufficient to retire the certificates at \$1,040 if exercised by February 1, 1932; \$1,030, if exercised by February 1, 1937; and thereafter \$1.020, and accrued rental in each case.

type of investment, has never been widely utilized in this country. The recent increase in land values, and the tendency to undertake promotions on long leaseholds, rather than on land purchased outright, however, suggest a wider use in years to come of land trust certificates as a means of financing the actual ownership of land.

2. The Bankers Building of Chicago.—This building, which is to be located at the southwest corner of South Clark and West Adams streets, was financed in part by the issue of 5,000 land trust certificates representing 5,000 undivided parts of the equitable ownership of the premises. The land, consisting of 22,250 square feet, had an appraised value of approximately \$6,500,000. The annual rental under the lease was \$275,000, which allows \$55 per annum for each certificate holder. The lease further provided for erection of the Bankers building to be started within six months of sale of certificates and furnished according to specifications.

A \$5,000,000 issue of first mortgage leasehold bonds was put out that followed these certificates. The appraised value of the land and buildings upon completion was \$13,622,262. It is apparent that the leasehold mortgage bonds in this case clearly occupied the position of a second mortgage, at least so far as the practical aspects of the situation were concerned.

CHAPTER XXIII

OBLIGATIONS OF THE UNITED STATES GOVERNMENT AND INSTRUMENTALITIES THEREOF

Government Obligations

Government revenue, sources of.—The government derives its revenues largely from taxes on the incomes of individuals or corporations; special taxes, such as duties levied on imports; excise taxes on the sale of certain kinds of commodities; fees and fines; revenues from the operation of government undertakings, such as the post office; and borrowing.

It is true that what is borrowed ultimately must be paid back, at least, that is the original intention, except in the case of permanent loans, such as those represented by English consols and French rentes. Ultimately, therefore, taxes or other sources of revenue must be sufficiently increased to take care of interest payments and the principal of government loans. If borrowing is not a permanent source of revenue, it is logical to raise the question as to why it is used in the first place. There are several answers to this question depending on the condition surrounding the loan. The first borrowing operations to be considered are those conducted during times of great stress, such as a war. Expenditures at such times are abnormally large—far beyond current revenues. It may be more equitable to borrow a part of the necessary funds rather than to impose confiscatory taxes and cause undue financial strain. In this way costs are spread over a future period and absorbed gradually. Another logical use of government borrowing is for purposes of constructing permanent improvements. It is expected that future generations will receive at least part of the benefit of such improvements and they may justly be expected to pay in part for them. Through borrowing operations the cost of these improvements is thus spread over a term of years and met as the bonds fall due. Furthermore, if such improvements enhance the wealth of the com-

munity, as roads and schools do, the additional taxes may constitute no real burden. A still third occasion for borrowing may arise when improvements are built that are expected to be self-supporting, such as the Panama Canal. Finally, borrowing in anticipation of current taxes by means of short term notes is a means of spreading government income equally over the entire year.

Public borrowing, history of.—Public borrowing is by no means confined to the present generation. As far back as the Middle Ages the Italian cities are recorded as floating public loans, while borrowing by English kings was common before the fourteenth century. Such uncertainty surrounded early government borrowing that loans of this nature were often considered as forced loans. Thus, in England under Edward IV and the Tudors, the exaction of compulsory loans from wealthy subjects became a frequent and almost regular expedient of the Crown. Under Henry VIII Parliament was twice called upon, in 1529 and 1544, to convert the public loans outstanding into benevolences by formally releasing the king from the obligation of payment. During Elizabeth's reign, however, the public debts were paid more promptly, and, after the passing of the Tudors, public credit was gradually improved.

Early debt history of United States.—The history of our national debt since 1789 has been singular, in that this country has never permanently defaulted in the payment of interest or principal of any of its debt. The Treasury Department, created in 1789, faced a national debt of \$52,788,222, to which should be added the debts of the several states, amounting in all to about \$25,000,000.¹ This total appears small

¹ The indebtedness of the United States, on January 1, 1789, including arrearage in interest, was:

Principal of foreign loans.....	\$10,098,706.02
Due France for military supplies.....	24,332.86
Arrears of interest to Jan. 1, 1790.....	1,760,277.08
Debt due foreign officers.....	186,988.78
Arrears of interest to Jan. 1, 1790.....	11,219.32
Principal of domestic debt (est.).....	28,858,180.65
Arrears of interest to Jan. 1, 1790.....	11,398,621.80
Arrears and claims (subsequently discharged).....	450,395.52

Total \$52,788,722.03

(Taken from Raymond, W. L., "American and Foreign Investment Bonds," p. 42, 1916, Houghton Mifflin Co., Boston.)

to-day, but it was a large sum for that generation. In 1803 a subsequent loan of \$11,250,000 was floated to finance the Louisiana Purchase, yet, by 1812, the total national debt had been reduced to around \$45,000,000. Despite the fact that the war with Great Britain, which lasted from 1812 to 1816, resulted in an increase in total debt to \$127,000,000, this entire amount was paid off by 1835.² The net indebtedness created by the Mexican War (1846-1848) was \$49,000,000. These loans, bearing 6 per cent interest, were floated at par or better. On July 1, 1851, the debt stood at \$68,304,796, whereas by 1857 the net debt had been reduced to \$9,998,622. Increased borrowings were occasioned by the panic of 1857, with the result that the debt increased to \$59,964,402, on July 1, 1860.³

Debt history, from Civil War to World War.—The Civil War, with its extraordinary requirements, brought the amount of interest bearing debt up to \$2,322,116,330, at the end of the fiscal year 1866.⁴ At the end of the war a large part of this debt was in the form of short term paper which was overdue. In fact, less than one half of the existing debt was actually funded, while such part of it as was funded consisted of a variety of issues, each bearing a different rate of interest and each surrounded by complicated terms and conditions as to duration, option, conversion, extension, and renewal.⁵ Upon assuming the office of Secretary of the Treasury in March, 1869, G. S. Boutwell proceeded with a comprehensive plan of refunding and consolidating the then complicated debt structure of the government and of reducing interest charges. This was accomplished under the Refunding Acts of 1870, 1871, 1873, and 1875. Considerable difficulty was experienced in marketing the first issues brought out under these acts, because interest and principal were payable in "coin." In view of the growing movement toward inflation just prior to this time, it was thought that the term might be interpreted to mean paper currency. With the passage of the Resumption

² Except for a small balance of \$328,582, which remained unpaid because payment had not been demanded.

³ *Financial Review* (1915), p. 90.

⁴ Annual Report of the Secretary of the Treasury on the State of the Finances for the Fiscal Year ended June 30, 1927, p. 514.

⁵ Dewey, D. R., "Financial History of the United States" (5th ed.), p. 331ff., Longmans, Green & Co., New York.

Act in 1875 and settlement of the question of tax elimination, however, the national credit greatly improved. The quotations on all national issues advanced rapidly thereafter, thus resulting in a substantial profit to the holders thereof. A large portion of the Civil War debt was reduced in the fifteen years following 1875 so that by 1890 the total interest bearing debt stood at only slightly over \$700,000,000.⁶ The unfortunate experiences which the Treasury met in the matter of gold withdrawals during the 90's required additional borrowing. The Spanish-American War brought a further increase in national debt, with the result that the total interest bearing debt on June 30, 1899, amounted to \$1,046,048,750.⁷

The construction of the Panama Canal was partly financed by bond issues. The Acts of June 28, 1902, and December 21, 1905, provided for an issue not to exceed \$130,000,000 2 per cent bonds to mature in thirty years, but callable in ten. Of this amount \$84,631,980 were actually issued at two different times at prices averaging 103.513 and 102.436. In 1909, 1910, and 1911 acts were passed providing for an issue of \$290,569,000 3 per cent bonds, maturing in 1961. Only \$50,000,000 of bonds were issued under these acts at an average price of 102.582.⁸ These bonds, however, were not eligible as security for national bank notes.

Government bonds, prices of.—The prices of government bonds from 1863 to 1913 were influenced by our national banking laws. For many years prior to the European War the securities of our national government sold at prices so high that their yield to the ordinary investor was unsatisfactory. This was not true during the very early period in our national history, when the question of state rights was being settled and when the ultimate fate of our central government was not assured, nor during the trying period of the Civil War. Indeed, during the War of 1812, United States bonds were issued on a basis of from 7 to 8½ per cent, while during the Civil War they sold on a basis as high as 12 per cent.⁹

⁶ Annual Report of the Secretary of the Treasury on the State of the Finances for Fiscal Year ended June 30, 1927, p. 514.

⁷ *Ibid.* See note on p. 599, for prices of government bonds from 1873 to 1912.

⁸ *Ibid.*, June 30, 1927, p. 505.

⁹ The reasons for such high rates of interest on government bonds during the Civil War lay partly in the uncertainty regarding the outcome of the war and partly in the depreciation that took place in the greenback currency which

The passage of the various acts, during and shortly after the Civil War, designed to create a national currency secured by a pledge of United States bonds (commonly referred to as the National Bank Acts), the successful termination of the struggle for national supremacy, and the passage of the Resumption Act in 1875 had the effect of raising the price of government bonds and reducing their yields. Indeed, it is necessary, in order to explain the extremely low yields on which government bonds have averaged to sell, especially since 1875, to understand in some detail the national banking system in effect prior to the date when the present Federal Reserve System became operative.

The original act, designed to create a national currency secured by the pledge of government bonds, was approved February 25, 1863. This act, as amended in 1864, provided for the issue by national banks of not over \$300,000,000 of circulating notes to be secured by United States bonds deposited with the Treasurer of the United States.¹⁰

was issued at that time. All banks, and the government itself, temporarily suspended specie payments. Large issues of inconvertible paper money caused depreciation in terms of gold. The prices of government bonds, the purchase of which then involved the chance of ultimate payment in paper currency, likewise declined to low points. The following prices of United States 6 per cent bonds, due in 1881, may be of interest in this connection. (See "American and Foreign Investment Bonds," Raymond, W. L., p. 46, 1916, Houghton Mifflin Co., Boston.)

PRICES OF U. S. 6's, 1881

<i>Year</i>	<i>Low</i>	<i>High</i>
1861 (outbreak of war).....	84½ (April)	94 (April)
1861.....	83 (June)	95¾ (October)
1862.....	87½ (January)	107¼ (June)
1863.....	91¾ (January)	110¾ (October)
1864.....	102 (July)	118 (April)
1865.....	103½ (March)	112¾ (January)

¹⁰ See 12 Statutes at Large, 665, and 13 Statutes at Large, 99. An Act to provide a National Currency, secured by a Pledge of United States Bonds and to provide for the Circulation and Redemption thereof.

"Section 16. *And be it further enacted*, That every association, after having complied with the provisions of this act . . . and before it shall be authorized to commence business, shall transfer and deliver to the Treasurer of the United States any United States registered bonds bearing interest to an amount not less than thirty thousand dollars nor less than one third of its capital stock paid in, which bonds shall be deposited with the Treasurer of the United States. . . ."

"Section 21. *And be it further enacted*, That upon the transfer and delivery of bonds to the Treasurer, as provided in the foregoing section, the association

The act was further amended in 1865 by placing a prohibitive tax on notes issued by state banks with the result that such notes were driven from circulation.¹¹ The effect of this legislation was to create a demand for United States bonds among national banks to be used as the basis of issuing bank notes, and to raise the market price of such bonds. Although modifications were made from time to time in these acts, our system of bank note issue prior to 1914 was based on the deposit of government bonds with the Treasurer of the United States. The prices of government bonds, prior to 1913, therefore, were determined largely by the profits that could be made by banks through putting bank notes into circulation and not directly by money conditions or the state of government credit.¹² With the growing need for bank notes as a circulating medium and the reduction in national debt after the Civil War, it is not surprising to find that certain government issues advanced so rapidly in price that by 1876 they sold on a yield basis of 1.53 per cent.¹³ For many years prior to 1913 government bonds consistently sold at prices substantially above those of other high grade securities. The following

making the same shall be entitled to receive from the comptroller of the currency circulating notes—equal in amount to ninety per centum of the current market value of the United States bonds so transferred and delivered, but not exceeding ninety per centum of the amount of said bonds at the par value thereof, if bearing interest at a rate not less than five per centum per annum. . . .”

“Section 22. *And be it further enacted*, That the entire amount of notes for circulation to be issued under this act shall not exceed three hundred millions of dollars.”

Subsequent amendments increased the amount of such notes that might be put into circulation.

¹¹ See 13 Statutes at Large, 469. Section 6. “*And be it further enacted*, That every national banking association, State bank, or state banking association, shall pay a tax of ten per centum on the amount of notes of any state bank or state banking association, paid out by them after the first day of July, eighteen hundred and sixty-five.”

¹² All issues of United States bonds were available as security for note issue under the old banking system except the Panama 3's of 1961.

¹³ Raymond, W. L., “United States and Foreign Government Bonds,” p. 77, 1916, Houghton Mifflin Co., Boston.

PRICES OF GOVERNMENT BONDS 1873-1912 (Yield Basis)

Security	Period	High	Date	Low	Date
6% 1881	1873-1882	1.53%	June 16, 1876	4.50%	October 17, 1873
4 1907	1883-1892	2.08	March 29, 1889	2.94	June 23, 1884
4 1907	1893-1902	1.58	March 14, 1902	3.39	August 7, 1896
4 1925	1903-1912	1.93	October 13, 1905	2.80	June 15, 1910

table will indicate the relative yield on government securities as compared to the yield of high grade railroad bonds and commercial paper rates for the period from 1890 to 1909.¹⁴

RATES OF INTEREST ON BONDS AND COMMERCIAL PAPER, IN
NEW YORK

(By Years, 1890 to 1909)

Year	U. S. 4's of 1907 and 1925	Average of 10 Railroad Bonds	4 to 6 Months Paper
1890.....	2.43	4.72	6.89
1891.....	2.65	4.85	6.50
1892.....	2.80	4.64	5.38
1893.....	3.04	4.75	7.62
1894.....	2.79	4.59	5.22
1895.....	2.89	4.48	5.73
1896.....	3.14	4.54	7.02
1897.....	2.73	4.38	4.72
1898.....	2.69	4.21	5.31
1899.....	2.47	3.96	5.48
1900.....	2.18	3.95	5.71
1901.....	1.97	3.79	5.41
1902.....	1.98	3.77	5.75
1903.....	1.99	3.96	6.21
1904.....	2.09	3.92	5.13
1905.....	2.00	3.82	5.17
1906.....	2.04	3.94	6.24
1907.....	2.18	4.22	6.55
1908.....	2.44	4.16	4.95
1909.....	2.52	4.00	4.67

Federal Reserve System, effect of, on market for government bonds.—In 1914 the Federal Reserve System was created to take the place of the old National Banking System. Under the new system, government bonds are no longer required as security for Federal Reserve Notes, or Federal Reserve Bank Notes. The Federal Reserve Act, however, did not at once do away with the old system of note issue, with the result that bonds outstanding prior to 1914, except the Panama 3's of 1961, still enjoy a special market. On the other hand, all government issues brought out subsequent to 1914 sell on the basis of their intrinsic merits as high grade investments and such tax exempt features as they enjoy, and prices are not affected by an artificially created market.

Furthermore, the Federal Reserve Act of 1913 authorized the Federal Reserve banks to purchase not to exceed \$25,-

¹⁴ Mitchell, W. C., "Rates of Interest and the Prices of Investment Securities," 1890-1909, *Journal of Political Economy*, April, 1911, pp. 269-308.

000,000 par value of bonds each year from national banks upon approval of the Federal Reserve Board. However, if the national banks prefer to continue the circulation privilege and not to sell their bonds they may do so. If the Federal Reserve banks do not issue circulating notes against the bonds purchased from national banks they may exchange 50 per cent of the amount of bonds so purchased for 30 year, 3 per cent bonds, and 50 per cent for one year, 3 per cent notes.

Government borrowing during the Great War.—In 1917, the United States, after a long period of debt reduction, entered upon a new era of financing. The prosecution of the War with Germany required expenditures on a scale of unparalleled magnitude. At the outbreak of the War it was generally felt that at least one-half the cost of the War should be financed by taxation, and to this end War taxes were put into effect which greatly increased government revenues from that source. Nevertheless, it was necessary to raise unprecedented amounts by the issue of bonds. The act of April 24, 1917, conferred authority on the Secretary of the Treasury to issue \$5,000,000,000 long term nontaxable bonds at not to exceed $3\frac{1}{2}$ per cent interest. The total amount of bonds issued under this act was \$1,989,455,550. This issue of bonds, which was dated June 15, 1917, was known as the First Liberty Loan. The act of September 24, 1917, with its numerous later amendments, was the authority for all subsequent War borrowing. The long term bonds issued consisted of the First, Second, Third, and Fourth Liberty Loans. Conversion of the First Liberty Loan bonds into bonds bearing 4 per cent and $4\frac{1}{4}$ per cent interest, but not wholly tax exempt, was authorized, as was the conversion of the 4 per cent Second Liberty Loan Bonds into $4\frac{1}{4}$ per cent bonds. The Third and Fourth Liberty Loans were originally issued to bear $4\frac{1}{4}$ per cent.¹⁵

The remaining War borrowing was accomplished by issues of short term securities, primarily certificates of indebtedness and the Victory Notes.¹⁶ The table on the next page shows the

¹⁵ For detailed descriptions of the various Liberty Loan issues and of the short term obligations issued during the War, see the Annual Reports of the Secretary of the Treasury on the State of the Finances, and the *Commercial and Financial Chronicle*, "State and Municipal Compendiums."

¹⁶ Although the Victory Notes were not issued until several months after the signing of the Armistice, they are considered as war borrowing, both because

UNITED STATES INTEREST BEARING DEBT OUTSTANDING AT END OF EACH FISCAL YEAR, 1917 TO 1927
(Years Ending June 30, in Millions of Dollars)

Issue	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Total Interest Bearing Debt.	\$2,713	\$11,986	\$25,234	\$24,061	\$23,737	\$22,711	\$22,008	\$20,982	\$20,211	\$19,384	\$18,251
Pre-war Loans.	\$974	\$966	\$883	\$884	\$884	\$884	\$884	\$884	\$765	\$766	\$766
Liberty Bonds, Total.	1,466	8,964	16,304	15,335	15,235	15,082	14,887	14,378	14,266	13,857	11,690
First 3½'s.	1,466	1,989	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,398	1,398
First 4's. . . . .	.....	.....	168	66	18	13	10	7	5	5	5
First 4½'s. . . . .	.....	.....	403	473	521	526	528	531	533	533	533
First Second 4½'s. . . . .	.....	.....	3	3	3	3	3	3	3	3	3
Second 4's. . . . .	.....	3,747	704	240	78	55	43	29	21	21	18
Second 4½'s. . . . .	.....	.....	2,862	3,085	3,239	3,256	3,156	3,076	3,083	3,084	1,288
Third 4½'s. . . . .	.....	3,228	3,959	3,663	3,611	3,474	3,408	2,997	2,886	2,488	2,148
Fourth 4½'s. . . . .	.....	.....	6,795	6,395	6,355	6,345	6,329	6,325	6,325	6,325	6,297
Treasury Bonds. . . . .	.....	.....	.....	.....	.....	.....	764	764	1,811	2,306	2,764
Short Term, Total.	273	2,056	8,047	7,842	7,618	6,745	5,473	4,956	3,369	2,455	3,031
Victory Notes. . . . .	.....	.....	3,468	4,246	3,914	1,991	.....	.....	.....	.....	.....
All Other.	273	2,056	4,579	3,596	3,704	4,754	5,473	4,956	3,369	2,455	3,031

amounts of each of the most important government loans outstanding at the ends of the fiscal years, 1917 to 1927.^{16a}

Clearly the debt of the United States increased rapidly both in size and complexity from the outbreak of the War until 1919. The peak was reached in August, 1919, when the total interest bearing debt amounted approximately to \$26,349,000,000. Thus, over \$25,000,000,000 was added to the national debt in about two and a half years.

Post War financial operations.—Since August, 1919, there has been a continuous reduction in the debt of the United States, although it is still far above the pre-war level. On October 31, 1927, the total interest bearing debt stood at \$18,112,558,235.90.¹⁷ This represents a reduction of slightly over \$8,000,000,000 since August 31, 1919. The table shown on p. 602 indicates that between the fiscal years 1919 and 1927 the amount of Liberty Bonds outstanding was reduced about \$4,500,000,000, and the amount of short term debt was reduced about \$5,000,000,000, while nearly \$3,000,000,000 worth of Treasury bonds were issued. The Treasury bonds are long term bonds bearing lower rates of interest than the Liberty bonds and Victory notes, and were issued for refunding purposes. The reduction of the long term debt was accomplished almost entirely through the gradual retirement of the Second and Third Liberty Loans. The entire Second Liberty Loan was called for redemption on November 15, 1927, while the Third Liberty Loan is due on September 15, 1928. The retirement of the Victory notes accounts primarily for the reduction in the short term debt.¹⁸

Tax exempt features of various War issues.—Of all the issues floated during the War period only two were entirely exempt from income taxes. The First 3½'s, as the first bonds issued under the April 24, 1917, act are called, are "exempt

the proceeds were used for war purposes and because they were issued before the highest peak of war time indebtedness was reached.

^{16a} Annual Report of the Secretary of the Treasury on the State of the Finances for Fiscal Year ended June 30, 1927, pp. 523-526.

¹⁷ United States Treasury Department, Monthly Debt Statement, October 31, 1927.

¹⁸ For detailed descriptions of the refunding and retiring of the debt since 1919 and for statements of the present outstanding issues, see the Annual Reports of the Secretary of the Treasury, and the *Commercial and Financial Chronicle*, "State and Municipal Compendiums." For statements of outstanding issues see also the Monthly Debt Statement of the Treasury Department.

both as to principal and interest, from all taxation, except estate or inheritance taxes, imposed by authority of the United States or its possessions or by the state or local taxing authority." The $3\frac{3}{4}$ per cent Victory notes were likewise exempt from all income taxes. All other issues enjoyed only partial exemption. The interest on all other issues is exempt from the income tax in the case of persons whose principal total holdings are not in excess of \$5,000.

The further exemption provisions applying to the different bonds are very complex. The amount of exemption varies with the issue and within the issue in the case of the convertible issues, and also varies with the amount held by the taxpayer and with the length of time since the conclusion of the War. The case of each taxpayer, therefore, requires separate investigation.¹⁹

Price history of War loans.—It hardly seems necessary to trace in detail recent fluctuations in the prices of government bonds. The principal War issues were all brought out at par and were largely oversubscribed. Popular enthusiasm and patriotism led to a wide participation in these loans. Furthermore, up to 90 per cent, at least, of the face value of bonds purchased could be borrowed from many commercial banks, which, in turn, were able to rediscount customers' paper secured by such bonds with the Federal Reserve banks, if members of the system. Interest rates were purposely kept low in order to facilitate such financing. After the War, however, artificial support was withdrawn from the money market and interest rates advanced sharply to between 8 and 9 per cent on commercial loans in 1920. As a result many weak holders disposed of their Liberty bonds and the quotations on all issues dropped to low levels in accordance with the working of the economic laws that cause bond prices to vary inversely with money rates. The lowest prices for all issues were reached in May, 1920, and were as follows:

Liberty $3\frac{1}{2}$'s	\$89.00
First Liberty 4's.....	83.00
Second Liberty 4's.....	81.40
First Liberty $4\frac{1}{4}$'s.....	84.00
First Second Liberty $4\frac{1}{4}$'s.....	86.00

¹⁹ For details see the Revenue Acts of the United States, and also the *Commercial and Financial Chronicle*, "State and Municipal Compendiums."

Second Liberty 4¼'s.....	81.00
Third Liberty 4¼'s.....	85.80
Fourth Liberty 4¼'s.....	82.00
Victory 3¾'s	94.60
Victory 4¾'s	94.70

The various discrepancies in price are accounted for by differences in tax exempt features, maturity dates, and coupon yields. As interest rates began to decline, however, all these issues advanced rapidly in price and at the close of the year 1927 were selling near their high points since the War.²⁰

Basis of government credit.—Government bonds, as distinct from bonds of private corporations, represent loans which the legally constituted authorities of the government covenant and promise to pay on specified conditions. Contracts of this nature which are entered into between sovereign powers and private individuals differ in fundamental respects from contracts between individuals. In case of failure on the part of a participant in a private contract to live up to the terms thereof, the remaining parties have the right to apply to the courts for satisfaction. The court, if it appears that the other parties to the contract have been injured by the acts or omissions of the party breaking the contract, will afford relief against such a party by giving a judgment against the defendant and in favor of the plaintiff. Thus, when a private individual contracts to pay interest and principal on a loan and fails to do so, the lender may take the action to court and get a judgment against the borrower. This judgment gives the borrower the right to attach all the property of the lender located within the court's jurisdiction. In the case of contracts with a sovereign

²⁰ HIGH AND LOW PRICES FOR LIBERTY BONDS, JAN. 1, TO
DEC. 31, 1927

<i>Issue</i>	<i>Low</i>	<i>High</i>
First Liberty Loan		
3½'s of 1932-1947.....	100 23/32	102 14/32
Conv. 4% of 1932-1947.....	100 17/32	102
Conv. 4¼'s of 1932-1947.....	102 28/32	103
2nd Conv. 4¼'s of 1932-1947.....		
Third Liberty Loan		
4¼'s of 1928.....	100 19/32	101 24/32
Fourth Liberty Loan		
4¼'s of 1933-1938.....	103 13/32	104 12/32

power, such as the United States, or any of the states of the Union, or a foreign state, the right of an individual to sue is lacking. It is beyond the power of any individual to bring ordinary legal compulsion to bear against an unwilling debtor, if the debtor be a sovereign government. This does not mean that one of the United States may not sue another state, for it is expressly provided in our Constitution that, each state being a sovereign power and on equal footing with every other state, one state may sue another in the courts of the United States. Nor must our previous statement be taken to exclude "collection by warship." It is possible for the citizens of one country to induce the government to dispatch military or naval forces to collect debts owed by another nation. Such action is quite distinct from the ordinary legal steps taken in the collection of private debts.

It is also true that, ordinarily, there is no specific security behind government bonds. In the case of bonds issued by some of the weaker foreign powers, there is sometimes a pledge of certain sources of revenue for the payment of principal and interest, such as customs duties, profits, or royalties from domestic monopolies, and the like; but this is entirely different from the pledge of property under a mortgage. After all, if the borrowing power decided subsequently to sequester such sources of revenue by force it might do so and the creditors would be powerless to object, unless the assets were in the custody of the creditor nation, or unless force was brought to bear by the creditors' government.

Security behind government bonds.—In view, therefore, of the very weak legal position of the holder of government bonds, it is customary to attribute a large part of their investment value to the willingness of the sovereign power to pay. Its good faith is, indeed, a factor of the utmost importance. It is not advisable, however, entirely to overlook the ability of the borrowing power to pay, for, after all, the degree of willingness may depend in a measure on the ease with which payments can be made. A study of defaults in government obligations will almost invariably show that the default was really the result of the inability of the government to meet its obligations without the levying of very heavy taxes and with consequent hardship to its citizens. Few politicians and few statesmen have the necessary courage to urge the passage

of tax laws that are onerous. The investor, therefore, in considering government bonds, must consider the reputation of the government over a long period for the prompt fulfillment of its promises, as well as the relation of the total debt of the issuing power to its revenues, its wealth, and its income.

United States bonds amply secured.—Bonds of the United States are in no different legal position from those of any other sovereign power. Their safety depends on the willingness of the people, as expressed through our national government, to meet their national obligations, and upon the ability of the nation to pay. In view of the enviable record of this country in meeting its obligations, and, in view, especially of the great wealth and prosperity now enjoyed by its people, it is unnecessary to go into an elaborate financial analysis of United States bonds.²¹

Government Instrumentalities: Federal Farm Loan Bonds

Rural credit system, factors leading up to.—Prior to the year 1916 there was general complaint in farming sections that, under the existing banking system, facilities for financing agricultural requirements were grossly inadequate. For many years the principal sources of funds for long term mortgage loans on farm properties were eastern banks, insurance companies, and large investors who either made such loans direct or through various mortgage houses which would take mortgages in the first instance and resell them later. The prevailing rates of interest charged on farm loans were high, frequently running to 8 per cent, in addition to which various fees and bonuses were required. Not infrequently the effective rate of interest which the farmer actually paid for his loan exceeded 10 per cent.

Increasing needs for agricultural credits.—On the other hand, the need for agricultural credit had increased rapidly within the past several decades. Until the end of the last century new farming territory had been continually opened up under homestead grants, and free land had been made available to pioneer settlers in western states. Land values were low and farming was conducted with a relatively small

²¹ In the chapter on Foreign Investments, the reader will find a statistical comparison of the more important countries of the world in respect to wealth, debt, income, and population.

amount of machinery. After the opening of the present century, however, conditions changed. Not only did land values increase greatly, but improved methods of cultivation required the general use of expensive farm equipment and machinery. The following report, based on the census of 1920, shows the extent to which this tendency has developed during recent years:

AVERAGE VALUE IN DOLLARS PER ACRE FOR ALL FARM LANDS

Year	1880	1890	1900	1910	1920
Land and Buildings.....	\$19.02	\$21.31	\$19.81	\$39.60	\$69.38
Implements and Machinery.....	.76	.79	.89	1.44	3.76
Live Stock	2.94	3.70	3.67	5.60	8.38
	<u>\$22.72</u>	<u>\$25.80</u>	<u>\$24.37</u>	<u>\$46.64</u>	<u>\$81.52</u>

As one might expect, the amount of capital required by farmers, most of which had been obtained by mortgage loans, likewise increased. The extent of the increase in the farm mortgage debt is likewise interesting. The following data are available from the United States census and cover only such farms as are operated by their owners:

Year	1890	1910	1920
Mortgage Debt	\$1,085,995,960	\$1,726,172,851	\$4,003,767,192
Average Debt per Farm.....	1,224	1,715	3,356

It is interesting to note that there has been a rapid increase in the value per acre of farm lands as well as in the average debt per farm during the past thirty years, the latter figure increasing nearly threefold.

In addition to the increasing requirements of the farmer for funds to be used for permanent investment, his demand for funds to meet current operations, such as the growing and financing of crops until sold, the growing and marketing of cattle, wool raising, and the like, have also increased.

Relief to farmers, necessity for.—The Federal Reserve System, which was inaugurated in 1914, greatly improved the entire commercial banking structure of the country and augmented, if anything, the funds available for financing the current operations of concerns and individuals engaged in industrial or commercial undertakings. On the other hand, the rapid development of investment banking during the years from 1890 to 1920 had likewise provided adequate means for legitimately financing the long term requirements of such concerns. Urban real estate was also adequately provided for

through the growth in savings and coöperative banks which specialize in loans on improved city real estate. In the face of these developments, no corresponding improvements had taken place in farm credits. The farmer had to rely on his old sources for long term borrowing, that is, the eastern capitalist, the insurance company, or the mortgage company, while short term financing had to be provided for as well as possible by a banking system which was designed for industrial and commercial loans and not for the discount of agricultural paper.

It is also significant that the Federal Reserve Act, as originally passed, did little, if anything, toward helping the farmer in financing either current or long term operations. A study of the discount privileges of member banks will show, for example, that the paper eligible for rediscount could not run beyond 90 days, although later a certain amount of agricultural paper not exceeding 9 months might be rediscounted. It is true that good practice requires a commercial bank to restrict its business largely to short term loans, that is, to loans running from thirty days to four months, and that only a relatively small portion of its loans be for six months. This requirement arises partly from the nature of the banking business and partly from the purposes for which current borrowing is ordinarily undertaken by business enterprises. The main assets of a commercial bank consist of loans and discounts, whereas its principal obligations consist of demand deposits. It would be out of the question for a commercial bank to engage extensively in long term financing for its customers, while obligating itself to pay out deposits on demand. Furthermore, the normal transaction which the commercial bank undertakes to finance is one which is consummated within six months at the most. Commercial loans are made to finance the purchase of current inventories, the extension of seasonal production, or customers' purchases; and the borrower, in each instance, should have liquidated the inventory, the seasonal increase in production, or his accounts receivable within a six months' period. For long term financing the business concern should look to the investment banker who obtains funds by the sale of stocks, bonds, or notes.

The farmer, on the other hand, engages in such current operations as planting, growing, and harvesting a crop, which

require from six months to a year, the raising of a herd of cattle for the market, which requires from one to three years, or the raising of sheep, whose wool is clipped once a year. In other words, so-called "current" operations of the farmer are spread over a much longer time than are the current operations of a merchant or a manufacturer, and, consequently, require longer loans, which, in turn, require banking facilities not offered by the ordinary commercial bank.

In view of these facts, it is not strange that the agricultural interests of the country should urge the passage of legislation to facilitate such financing as they require; and, when one considers the basic rôle played by our agricultural industry, it is perfectly logical that adequate funds should be provided, under satisfactory banking arrangements, for purposes of legitimate financing. These ends were sought in the passage of the Federal Farm Loan Act in July, 1916.

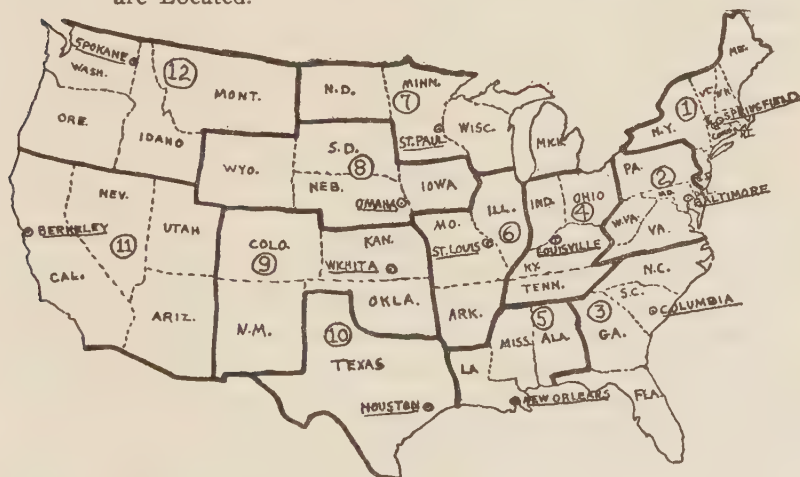
Federal Farm Loan Act, types of banks created by.—Two types of banks were created under this system: first, Federal land banks and joint stock land banks, which were designed to provide funds necessary for long term financing, that is, loans on mortgages. Subsequently, in 1923, by amendment of the original act, Federal intermediate credit banks were established to provide funds for the financing of operations that require from six months to three years for their consummation. In other words, the Federal intermediate credit banks were designed to meet such requirements as could not be met by the ordinary commercial bank, on the one hand; and which, on the other, did not necessitate a long term mortgage. The essential difference between the Federal farm land banks and joint stock land banks is in the matter of ownership. The former are coöperatively owned, while the latter are private corporations run in the interest of stockholders.

Creation of Farm Loan Board.—The entire operation of the plan is under the Federal Farm Loan Board, which has been created within the Treasury Department. This Board consists of the Secretary of the Treasury as chairman, ex officio, and six members appointed by the President with the advice and consent of the Senate. The appointive members serve for eight-year terms and devote all their time to the business of the board. Not more than three of the members may be of one political party, and they may be removed for cause by the President. This board has general supervision

of the system. It grants charters to land banks and farm loan associations, appoints appraisers, examiners, and registrars, passes on all applications for loans and bond issues, regulates interest rates and charges, attends to the preparation and printing of bonds, examines land banks, publishes information regarding the system in the form of pamphlets, and is required to make an annual report to Congress.

Federal farm land banks, establishment of.—According to the original act the continental United States was to be divided by the Farm Loan Board into twelve districts to be known as the Federal land bank districts, and in each district a Federal land bank was to be established with its principal office located

Fig. 27.—Map Showing the Division of the United States Into 12 Federal Land Bank Districts and Cities in which Federal Land Banks are Located.



in such city as the Federal Farm Loan Board should designate.²² In establishing these districts the board took into consideration such factors as total land area, area in farm land, amount of outstanding mortgage indebtedness, the value of farm lands and buildings, population, both rural and urban, and the gross value of farm products. The board also attempted to spread the risk by grouping together states with unlike crops and resources. The ultimate territories set up and the location of the Federal land banks are shown on the map on this page.

²² Amendments to the act have since extended its provisions, in somewhat restricted form, to cover Porto Rico and Alaska, through the instrumentality of branch banks.

National farm loan associations, capitalization of.—Every Federal land bank was to have, before starting business, a subscribed capital of not less than \$750,000, with a par value of \$5 each, which might be subscribed to and held by any individual, firm, or corporation, by the government of any state, or by the United States. Stock of the Federal farm land banks owned by the United States government is not entitled to dividends, although all other stock outstanding is. The act further provides for the formation of corporations to be known as National Farm Loan Associations, which may subscribe to and hold stock in Federal farm loan banks. The stock which these associations hold cannot be transferred or hypothecated. Voting rights, furthermore, attach only to the stock owned by farm loan associations and the government. The purpose of forming such associations was to create media through which loans might be made by the Federal land banks. Each such association is a local corporation and must be made up of ten or more individuals, each of whom are borrowers from the banks. Each borrower is required to subscribe to an amount of stock in the association equal to 5 per cent of his loan. The proceeds of these subscriptions are then invested by the associations in an equal amount of Federal land bank stock, which is held by the issuing bank as additional security for the loan and is eventually retired by its payment.

Functions of farm loan associations.—These farm loan associations are required to indorse all loans which are made through them and are also responsible for supervising collection of interest and amortization payments, reporting delinquencies in the payment of taxes, and applying the proceeds of all loans. In view of the fact that the stockholders of farm loan associations are liable for an assessment up to 100 per cent of the amount of their stock in case the association fails to meet its obligations, it is apparent that there is a mutuality of interest among members to see that all loans taken are good and that proper safeguards are provided for keeping up payments and taxes. This relieves the bank from much detail it would otherwise be required to meet. In those localities that fail to produce their own farm loan associations, as above provided, the Farm loan bank may appoint an incorporated bank, a trust company, a mortgage company, or a savings bank to act as agent in negotiating loans. On December 31, 1926,

the total number of active loan associations in operation was 4,665.

Over 98 per cent of the original capital of \$750,000 for each bank, or \$9,000,000 for the entire system, was originally subscribed to by the Federal government. The law requires, however, that as soon as subscriptions to the capital stock by farm loan associations shall amount to \$750,000 in any bank, the bank shall then apply semiannually to the retirement of the original stock 25 per cent of all sums thereafter subscribed until all such stock is retired at par. In this way it is expected that ultimately the sole stockholders in the Federal land banks will be the farm loan associations.

Management and functions of Federal land banks.—The management of each Federal land bank rests in a board of seven directors, three of whom are appointed by the Farm Loan Board and represent the public interest; three, by the farm loan associations and borrowers through agents, and, therefore, represent the borrowers; and one, known as the "director at large," is selected by the Farm Loan Board from the three nominees receiving the greatest number of votes of the borrowers.

In addition to acting as depositaries of public money under certain restrictions, the principal function of the Federal farm loan banks is the loaning of money secured by first mortgages on farm property on the following terms: loans may be made only to bona fide farmers engaged, or about to engage, in the cultivation of the farm mortgaged. Each loan must be secured by a duly recorded first mortgage on farm land within the district in which the bank is situated. Such mortgages may not exceed 50 per cent of the appraised value of the land, nor 20 per cent of the appraised value of the permanent insured improvements thereon; nor shall any loan be for more than \$25,000, nor for less than \$100. Interest on such loans shall not be over 6 per cent per annum, or more than 1 per cent in excess of the coupon rate of the bank's last bond issue, and shall be payable in annual or semiannual installments. At the same time an additional amount is paid that will cancel the entire loan in not less than five, nor more than forty, years. Borrowers, however, are given the privilege of paying off the unpaid balance, or any number of unpaid installments, after five years, and, under certain conditions, may be allowed to

pay the loan off at an earlier date, providing the bank is compensated for the cost of making the loan.

An application for a loan is referred first to a loan committee of the local association. This committee investigates the character and the financial responsibility of the applicant and the security offered. A report is then rendered to the land bank. This report must be assented to and signed by all three members, none of whom may have a personal interest in the loan. The report must further state the estimated value of the property as well as such collateral information as comes to the attention of the board. It is then submitted, with application attached, to the directors of the bank. If all the requirements are met, the property is then appraised by a Federal appraiser, appointed by the Federal farm loan bank, and reviewed by the chief appraiser of the bank, who then submits the application, with his recommendation, to the executive committee of the bank for final action. No mortgage, however, is eligible as security for a bond issue until further approved by the Farm Loan Board.

The purposes for which loans may be granted are restricted as follows: (1) to provide for the purchase of land for agricultural uses; (2) to construct or provide for buildings or improvements on farm lands; and (3) to liquidate obligations or mortgage loans incurred by the borrower for purely agricultural purposes, or incurred prior to January 1, 1922. In this way loans are restricted to the financing of long term operations of farmers, entered into solely in the conduct of their normal business.

Federal land bank bonds.—The Federal land banks must acquire the necessary funds to make loans on a large scale. It is obvious that the funds available through the sale of stock are inadequate. Furthermore, these banks do not accept deposits, other than those made by the Treasury Department, in the way that savings banks do, and such public funds as are deposited are not available for mortgage loans. The method which is provided for obtaining funds involves the issue of debenture bonds secured by the pledge of farm mortgages. Every Federal land bank may, subject to the approval of the Federal Farm Loan Board, issue and sell bonds collaterally secured by an equal amount of first mortgages on farm property such as those just described, or by United States

government securities. As mortgage loans are reduced by amortization, additional mortgages or government securities must be deposited to the amount of such reduction. In this way the equities under the outstanding bonds are constantly increasing. True, the par value of mortgages deposited remains constant; but, as the principal of any given mortgage is retired, the amount outstanding in relation to the original appraised value of the property decreases. These bonds may be issued in denominations of \$40, \$100, \$500, and \$1,000, and may be registered, or in coupon form. Bonds may run for specified minimum and maximum periods, subject to payment and retirement at the option of the banks, at any time after the minimum period specified in the bond has elapsed, which shall be not longer than ten years from the date of issue. The coupon rate of interest could not exceed $5\frac{1}{2}$ per cent per annum prior to 1923 and at present (1928) may not exceed 5 per cent. No bank is permitted to issue or obligate itself for outstanding bonds in excess of twenty times its paid-up capital and surplus, or to receive from any national farm loan association additional mortgages when the principal remaining unpaid upon mortgages already received from such association shall exceed twenty times the amount of capital stock owned by such association. Furthermore, while each bank is primarily liable for its own issues, all banks are jointly and severally liable for any of the bonds of the system outstanding. In other words, there is a mutual liability on all the banks in case of default in the payment of principal or interest by any issuing bank. An amendment to the act, approved March 4, 1923, provided for the actual issuance of consolidated bonds, signed by the Farm Loan Commissioner and constituting a joint and several obligation of all banks, although, up to December 31, 1926, no such bonds had been issued.

While the bonds issued by the Federal land banks are considered as "instrumentalities of the government of the United States," and, therefore, are exempt as to principal and interest from all Federal, state, and local taxation, except estate or inheritance taxes, they are not in any way guaranteed by the government. Despite this lack of guaranty by the government, there is a strong disposition on the part of bankers to feel that in case of default the government would give very

powerful support. This opinion, however, is merely based on the close relationship which the government assumed in starting these banks and has continued to maintain in their operations.²³

Statistics of operation.—The growth of the Federal Farm Land Bank System has been most satisfactory during the first ten years of its existence. The original capital of all banks was \$9,000,000, of which \$8,892,130 were supplied by the government. The capital account on December 31, 1926, stood at \$57,752,390 of which only \$1,058,885 were owned by the United States; borrowing farmers in national farm loan associations had provided \$56,073,365; borrowers through agents, \$620,025; and individual subscribers, \$115. Combined earnings, from the beginning of business to the end of 1926, amounted to \$43,799,892 and were distributed as follows: \$17,932,401 to pay dividends; \$11,351,758 to charge off real estate acquired by foreclosure; \$900,562 to set up a reserve for delinquent installments; \$178,990 charged off on account of banking house property; and \$13,436,180 carried to undistributed surplus, reserves, and profits accounts. The total amount of loans extended up to the close of 1926 amounted to \$1,300,674,314, while the principal amount of all mortgages carried on the books at that time was \$1,077,818,724.²⁴

The consolidated balance sheet of the twelve Federal farm land banks on December 31, 1926, as reported by the Federal Farm Loan Board, follows:

²³ Hon. Charles E. Hughes, acting as private counsel for a group of bankers at the time they were investigating an early issue of Federal land bank bonds, said in part:

"Taking into consideration the facts which have been stated with respect to the organization and control of the Federal land banks, I am of the opinion that the Farm loan bonds which are about to be issued by the banks under the authority and direction of the Federal Farm Loan Board by virtue of the power conferred by Congress, and which have been expressly declared by Congress to be instrumentalities of the Federal Government, must be regarded as obligations having the support of the good faith and credit of the United States. And while such obligations, because of the nature of sovereignty, confer no right of action against the United States without its consent, being only binding on the 'conscience of the sovereign,' and hence in this aspect invite reliance on the sense of justice of Congress, still the actual relation of the issue of these bonds affords additional grounds for sustaining their validity."

²⁴ Tenth Annual Report of the Federal Farm Loan Board, year ended December 31, 1926, pp. 3, 4.

OBLIGATIONS AND INSTRUMENTALITIES OF U. S. 617

CONSOLIDATED STATEMENT OF CONDITION OF THE TWELVE
FEDERAL LAND BANKS

(As Reported by Them, at the Close of Business December 31, 1926)

ASSETS	LIABILITIES
Net mortgage loans.....\$1,077,818,724	Farm loan bonds out-
Interest accrued but not	standing .....\$1,059,216,615
yet due on mortgage	Interest accrued but not
loans 16,875,323	yet due on farm loan
U. S. Gov't bonds and	bonds 15,025,346
securities 27,496,963	U. S. Gov't deposits.....
Interest accrued but not	Notes payable 1,550,832
yet due on bonds and	Accounts payable 780,887
securities 285,545	Other interest accrued but
Other interest accrued but	not yet due..... 11,128
not yet due..... 13,737	Due borrowers on uncom-
Cash on hand and in	pleted loans 682,563
banks 15,832,244	Amortization installments
Notes receivable, accept-	paid in advance..... 2,074,208
ances, etc. 4,167,214	Farm loan bond coupons
Accounts receivable 1,990,688	outstanding (not pre-
Installments matured (in	sented) 2,147,864
process of collection).. 2,249,979	Dividends declared but
Banking houses 2,561,710	unpaid 2,061,812
Furniture and fixtures... 255,473	Other liabilities 371,791
Sheriffs' certificates, judg-	Net Worth
ments, etc. 4,990,417	Capital stock, U. S.
Other assets 573,597	Gov't 1,058,885
	National Farm Loan
	Association 56,073,365
	Borrowers through
	agents 620,025
	Individual subscribers.. 115
	Total capital stock 57,752,390
	Reserve (legal) 9,203,600
	Surplus, reserves, etc.. 52,044
	Undivided profits 4,180,536
	Total net worth.. 71,188,570
<u>\$1,155,111,616</u>	<u>\$1,155,111,616</u>

Analysis of results: foreclosures.—The most significant comparison to be made of the accounts contained in this statement pertains to the relation between bonds outstanding and capital and surplus. We find, for example, that bonds have been issued to the extent of about 14.9 times combined capital and surplus, as compared to a legal limit of twenty times.

Further light on foreclosures is given by the account "sheriffs certificates, judgments, etc." (subject to redemption) to the amount of \$4,990,417. This account represents such loans as are in default and have been foreclosed, but which may still be redeemed by the mortgagor upon payment of taxes, back interest, and expenses so far incurred in process of collection. A further analysis of the actual experience of the Federal land banks in the matter of foreclosure is available in the annual reports of the Farm Loan Board. Up to December 31, 1926, the twelve banks had instituted 14,191 foreclosures, involving a total amount of \$44,047,595. Of these 5,915, involving \$18,220,478, had been satisfactorily settled; 1,581 cases, involving \$4,959,732, were still pending; 541 cases, involving \$1,646,121, had been settled by the purchase of land by outsiders; and 6,154 cases, involving \$24,829,227, had forfeited their land to the banks. Of this amount \$8,232,865 had been disposed of, \$4,990,417 was still carried on the books under sheriff's certificates subject to redemption, and \$11,605,946²⁵ had been written off against profits, although the land was then held by the banks. It is reasonable to assume that this land will be sold and a corresponding credit made to profit and loss surplus.²⁶ If one compares the total amount of loans still unsettled—\$29,788,959—with total loans outstanding—\$1,077,818,724—the greatest possible loss would be no greater than 2.76 per cent of such loans. As a matter of fact, the possibilities of loss were very much less than this, as the pledged security undoubtedly had a substantial value.²⁷

Summary.—Agriculture is a basic industry. If mortgage loans on farm properties are based on conservative appraisals, bonds issued against such mortgages are undoubtedly investments of the highest class. In view of the fact that political appointees are, to a certain extent, in charge of appraisals, it was at first feared that loans would be made on the basis of overextended appraisals. The banks, however, have

²⁵ Except \$254,187 in revaluing fund of Spokane Commission.

²⁶ Tenth Annual Report, Federal Farm Loan Board, p. 11.

²⁷ Up to December 31, 1925, transactions incident to the disposition of acquired lands had resulted in a net loss of only \$329,111 for the entire system. This is less than .03 of 1 per cent of all loans outstanding and is sufficient evidence that, up to that time, the system had been operated conservatively.

weathered a rather prolonged and extended depression in the agricultural industry and losses under foreclosures have proved negligible. Furthermore, the earnings of the system had been satisfactory up to December 31, 1926, despite a book loss of over \$11,000,000 representing the entire value of lands acquired under foreclosure. At the present time, therefore, all the bonds of these banks must be accorded a very high investment rating.

Joint Stock Land Banks

Organization.—As opposed to the Federal land banks, which are essentially closed corporations, the voting stock of which is owned either by the government or by national associations made up of borrowers, the joint stock banks are essentially private corporations and differ but little in form from any other bank. These banks may be organized under the Farm Loan Act by ten or more natural persons to carry on the business of lending on farm mortgage security and of issuing farm loan bonds under certain restrictions. To obtain a charter the proposed bank must have at least \$250,000 subscribed capital stock, all of which must be paid in before it is permitted to issue bonds. The management of these banks rests in a board of five directors who are elected by the shareholders. As in the case of other banks so here double liability attaches to the bank's stock. Shareholders of every joint stock bank shall be held individually responsible, equally and ratably, but not one for another, for all contracts, debts, and engagements of such bank to the extent of the amount of stock owned by them at the par value, in addition to the amount paid in and represented by their shares.

Methods of operation.—These banks are permitted to make loans secured by farm mortgages in much the same way as the Federal land banks are. Loans may not exceed 50 per cent of the appraised value of the land, nor 20 per cent of the appraised value of improvements thereon; nor may more than 15 per cent of their capital and surplus, nor more than \$50,000, be loaned to any one borrower. While the act itself fails to define the purposes for which loans may be granted, the Farm Loan Board makes a practice of approving such loans only as conform to the general purposes for which

Federal land banks may lend. All appraisals are first made by appraisers of the bank, and subsequently approved by appraisers of the Farm Loan Board, so that all loans are based on appraisals approved by a government representative. These banks deal directly with borrowers and do not lend through associations as do the Federal land banks.

Joint stock banks are allowed to issue bonds secured by farm mortgages deposited with the Federal Farm Loan Board up to 15 times their capital and surplus.²⁸ The equity here provided in the form of capital and surplus, therefore, exceeds the minimum requirements of the Federal land banks. On the other hand, there is no joint liability as in the case of the Federal land banks. The double liability feature, however, applies to the stock of both banks.

Statistics of operation.—The volume of business transacted by the joint stock banks is somewhat less than that transacted by the Federal land banks. From the date of organization to December 31, 1926, loans to the amount of \$747,654,886 had been made, of which \$115,179,357 had been paid off, leaving in force on that date \$632,475,529. The outstanding capital stock of these banks at that time amounted to \$44,739,620, the total number of banks in operation being 56.²⁹ The following combined statement for all banks will show the scope of their current operations:

²⁸ Loans may not bear interest at a rate exceeding 1 per cent of the rate established for the last series of farm loan bonds issued by them.

²⁹ Tenth Annual Report, Federal Farm Loan Board.

OBLIGATIONS AND INSTRUMENTALITIES OF U. S. 621

CONSOLIDATED STATEMENT OF CONDITION OF THE JOINT STOCK
LAND BANKS

(As Reported by Them, at the Close of Business, December 31, 1926)

ASSETS		LIABILITIES	
Net mortgage loans.....	\$632,475,529	Farm loan bonds outstanding	\$605,261,500
Interest accrued but not yet due on mortgage loans	10,316,574	Interest accrued but not yet due on farm loan bonds	7,223,905
U. S. Gov't bonds and securities	13,632,511	Notes payable	7,187,890
Interest accrued but not yet due on bonds and securities	92,570	Accounts payable	1,263,594
Other interest accrued but not yet due.....	17,306	Other interest accrued but not yet due.....	68,685
Cash on hand and in banks	11,820,966	Due borrowers on uncompleted loans	1,729,516
Notes receivable, acceptances, etc.	1,432,974	Amortization installments paid in advance.....	1,769,583
Accounts receivable	1,386,522	Farm loan bond coupons outstanding not presented)	1,371,893
Installments matured (in process of collection)..	2,283,683	Dividends declared but unpaid	737,697
Banking houses	1,085,138	Other liabilities	554,928
Furniture and fixtures....	195,614	Net worth	
Sheriffs' certificates, judgments, etc.	2,259,993	Capital stock paid in...	44,739,620
Real estate	4,695,572	Surplus paid in.....	1,773,508
Other assets	1,850,180	Surplus earned	1,471,826
		Reserve (legal).....	4,829,865
		Other net worth accounts	1,359,571
		Undivided profits	2,201,550
		Total net worth....	56,375,940
	<u>\$683,545,130</u>		<u>\$683,545,130</u>

Analysis: foreclosures.—So far as combined operations are concerned, it would appear that these banks have been operated along reasonably conservative lines. Total bonds outstanding are just slightly in excess of ten times capital and surplus. Sheriffs certificates outstanding amounted to \$2,259,993. Total assets acquired under foreclosure and not disposed of equaled \$9,663,594, or approximately 1.53 per cent of all loans carried on the books of the banks. A further analysis of foreclosures as given in the 1926 report of the Board shows that the total sum involved in 1,894 foreclosures, up to December 31, 1926, was \$16,898,267. Of these, 489 cases, involving \$3,630,652, had been settled; 263 cases, in-

volving \$2,610,348, were pending; whereas 1,031 cases, involving \$11,856,960, had resulted in the banks acquiring lands. The total net loss resulting from the disposition of acquired property was \$191,328, or about .03 per cent of all loans outstanding.³⁰

The purchase of joint stock bank bonds, despite this apparently successful showing, cannot be made safely without discrimination. Some of the banks appear to have been well managed, others less so. These banks are private institutions and are operated for the profit of their shareholders. Much depends on the character of the management, despite the check on appraisals effected by the requirement that all loans shall first be approved by a Federal appraiser. To show the wide difference in the experience of these banks in respect to foreclosure, one should compare such banks as the Greensboro, North Carolina, having only 3 foreclosures at the close of 1926, to the amount of \$7,465.66, with the southern Minnesota bank, with 224 foreclosures, involving \$2,124,436.40, or about 12 per cent of the total amount of foreclosures for the entire system. The Farm Loan Board has assumed some power to correct situations of this kind through a recent ruling which prevents the payment of dividends by either Federal land banks or joint stock banks, so long as combined real estate and sheriffs' certificates are in excess of the nonlegal reserves of the bank.³¹

³⁰ During 1927 the joint stock land banks, as a whole, did not fare quite so well. There was a substantial increase in sheriffs' certificates and lands acquired under foreclosure. In fact, several of the banks were forced into temporary receivership.

³¹ At a regular meeting of the Farm Loan Board held on the 27th day of November, 1925, the following rules and regulations were adopted:

"First: that hereafter no federal land bank or joint stock land bank shall pay any dividend to shareholders without the approval of the Farm Loan Board.

"The Board will not approve the payment of any dividend unless

"(a) The undivided profit account, exclusive of premiums on sales of bonds and stocks, and legal reserve requirements, shall show a balance sufficient to pay the dividend;

"(b) The payment of dividends shall not reduce the account available for dividends below the amount at which real estate carried through foreclosure or by deeds from borrowers is carried on the books of the bank as an asset, provided, however, that in case the bank has reserves sufficiently in excess of legal requirements to absorb this real estate, this provision may be waived.

"In the sale of stock by a joint stock bank, the portion of the premium col-

It is advisable, therefore, for the prospective purchaser to study the balance sheets of those banks whose obligations he contemplates purchasing with particular reference to the real estate acquired under foreclosure and sheriffs' certificates accounts. Further evidence bearing on the foreclosure experiences of individual banks is available in the annual reports of the Federal Farm Loan Board. Another word of caution, pertaining to the size of the bank, may be in order. It must be recalled that these banks all have overhead expenses, and that a certain minimum expense is involved, quite regardless of the amount of loans outstanding. In the case of banks with small amounts of loans outstanding, the gross profit may scarcely meet overhead, thus leaving a very scant margin above interest requirements. Despite the presence of adequate security, the investor naturally likes to feel that he has a going organization behind him and one that is likely to continue in business. Unless provision is made to reduce overhead in the case of the smaller banks, by association with larger institutions, special care should be exercised in checking up the qualifications and backings of their sponsors.

lected from the purchasers of stock for the purpose of acquiring new business shall be set aside in an account styled 'Reserve for New Business' and charges against said account shall not exceed 1% of the total amount of new business actually acquired and made possible by the sale of said stock.

"A joint stock land bank or federal land bank may deduct from premiums received on sale of bonds any discounts on other sales.

"Second: Any joint stock bank desiring to increase its capital stock will be required to submit to the Farm Loan Board an application setting forth the amount of such increase and the reasonable needs of an increase in capital within the succeeding six months, and also the price at which any additional capital stock is to be sold, as well as the method by which such sales is to be effected.

"Third: Real Estate acquired by any bank through foreclosure or by conveyance from borrowers in satisfaction of a mortgage debt will not be carried as an asset for an amount in excess of the principal of the original loan on such real estate. If the land so acquired is not disposed of by the bank within one year, a depreciation of 20 per cent shall be charged to undivided profits or reserve and a like charge-off annually thereafter.

"In case any bank shall dispose of acquired real estate and accept a mortgage on such real estate to secure the whole or any part of the purchase price, such mortgage, unless eligible for assignment to the registrar as security for bonds, must be carried separate from the bank's mortgage loan account and under an item which will clearly indicate the character of the obligation represented."

Intermediate Credit Banks

Functions and powers.—The two types of banks just discussed provide long term credits for the farmer. His short time requirements are served in part by ordinary commercial banks and in part by intermediate credit banks, which were created by authority of the Agricultural Credits Act of 1923.

There are twelve of these institutions located in the same cities as the twelve Federal land banks. The functions and powers of these banks are:

1. To discount for, or purchase from, any national bank, state bank, trust company, agricultural credit corporation, or specified types of coöperative associations, with their indorsement, notes, bills of exchange, or drafts, the proceeds of which have been advanced for any agricultural purpose or for raising, breeding, fattening, or marketing live stock.
2. To buy or to sell, without recourse, debentures issued by any other Federal intermediate credit bank.
3. To make loans or advances to coöperative agricultural or live-stock associations, if the notes representing such loans are secured by warehouse receipts or shipping documents covering products actually sold or in process of sale. Such loans shall not exceed 75 per cent of the market value of such products.

There are certain restrictions as to the amount of loans or paper that may be discounted for any bank, individual, or association, and all loans, at the time they are made or acquired through rediscount, must have not less than six months nor more than three years to run. Rates of discount and interest on all loans must be approved by the Farm Loan Board.

Financing through debentures: scope of operations.—These banks are authorized to issue debentures up to ten times their paid-up capital and surplus, having not more than five years to run to maturity, which must be secured by at least a like face amount of cash, or notes, or other obligations discounted. These bonds, while not a direct obligation of the government, are regarded as instrumentalities thereof and, accordingly, are free from all taxes, except inheritance taxes. All the capital stock of the intermediate credit banks is held

by the government. As in the case of the Federal Land Bank System, there is mutual liability on the part of all the banks of the system. The following balance sheet shows the scope of operations of these banks:

CONSOLIDATED STATEMENT OF THE TWELVE FEDERAL INTER-MEDIATE CREDIT BANKS

(At the Close of Business December 31, 1926)

ASSETS		LIABILITIES	
Direct loans	\$52,704,473	Capital stock subscribed..	\$60,000,000
Rediscunts	39,729,812	Surplus	1,033,697
Accrued interest on loans and rediscunts	593,057	Undivided profits	827,226
Other securities	1,983,552	Reserved for matured de- bentures	17,145
Accrued interest on other securities	506	Reserved for depreciation and losses	377,734
Other accrued interest....	750	Debentures outstanding...	68,580,000
Cash on hand and in banks	4,074,125	Accrued interest on debentures outstanding	755,108
Capital stock callable from U. S. Treasury	35,000,000	Notes and bills payable...	1,400,000
Furniture and fixtures....	19,600	Notes and bills redis- counted	664,800
Profit and loss	692,420	Deferred rediscunts.....	44,789
Other assets	209,358	Interest collected net earned	573,348
		Other accrued interest....	5,990
		Other liabilities	727,814
	<hr/>		<hr/>
	\$135,007,652		\$135,007,652

The character of these debentures is very high from an investment standpoint. Much of the underlying security is in the form of indorsed paper and the balance is adequately secured by actual merchandise in process of sale. Furthermore, the amount of debentures outstanding as of October 31, 1926, was less than the amount of capital stock exclusive of surplus. Enjoying as they do full tax exemption, these bonds sell at nearly the same prices as outright obligations of the government.

History of Agricultural Banks

The present experiment of our government in supporting and supervising banks established for the purpose of extending credit to agriculture has been successfully undertaken by other

countries. As early as 1769 The Silesian Landschaft was founded by Frederick the Great to facilitate the extension of long term loans to farm-land owners, following the devastation of the Seven Years' War. This organization was successful from its beginning, and, in 1912, had total loans outstanding to the amount of \$150,328,879. At that time there were twenty-three other similar institutions operating in Germany. In France a similar development took place. The Credit Foncier was founded in 1852 and expanded rapidly until, in 1922, it had bonds outstanding to the extent of 7,000,000,000 francs. From 1845 to 1895 similar institutions were formed in Switzerland, Sweden, Denmark, Hungary, and Russia, all of them patterned largely on the same lines as the German institutions, and designed to satisfy the credit requirements arising from more scientific methods of production. The successful operation of European land banks and the functions performed by this type of bank augurs well for the future of the system recently inaugurated in this country.

CHAPTER XXIV

CIVIL OBLIGATIONS—STATE BONDS

State bonds differentiated from municipal bonds.—The term "municipal bond," in contrast to "government bond" applies to the obligations of states, counties, municipalities, and other political subdivisions. Although all of these issues are generally grouped under the one heading "municipals," there are, nevertheless, fundamental differences among the various types of securities which are so classified. The first and perhaps the most important is between state bonds and the obligations of political subdivisions thereof. Under the Constitution of the United States, each individual state is a sovereign power in itself in respect to all powers not specifically delegated therein to the United States nor prohibited by it to the states. Accordingly, the status of state debts is very much the same as that of United States debts: such debts rest on the good faith and willingness of the states to pay their obligations when due. Legal compulsion cannot be brought by individuals against a state. It is true that one state may sue another state, but this is of little comfort to an individual who holds the bonds of a defaulting state.¹

Thus, while all state, county, city, and town bonds, as well as special district bonds, are classed as "municipals" in market discussions, as contrasted to government bonds, this division is not entirely logical. A better classification would be to group state and government bonds together, and to place county, city, village, and district bonds in a separate group. The reason

¹ There are five states, Indiana, Wisconsin, Nebraska, Nevada, and Mississippi, which do permit, under their own constitutions, their citizens to institute suits against them. In certain instances, holders of defaulted state bonds have donated them to other states, which subsequently brought suit against the defaulting state. Thus a holder of North Carolina bonds donated \$10,000 of them to South Dakota, which carried the case to the United States Supreme Court and received \$27,410.

for suggesting this reclassification is to emphasize the difference between state bonds and obligations of subdivisions of states. Although pains are taken to make clear the logical distinction, we shall, for the most part, adhere to the customary groupings.

It is interesting to recall briefly the history leading up to the present situation in respect to state bonds. At the time the Constitution was under discussion, there was a strong sentiment in favor of state rights. The idea of a strong Federal government was not then generally accepted. Accordingly, the individual states insisted on retaining a large measure of autonomy in their fiscal relations. Among the specific restrictions placed upon them were the following: they were not allowed to coin money, to issue bills of credit, nor to declare anything but gold and silver legal tender; they were also prohibited from levying import, export, or tonnage duties. Furthermore, no state was permitted to pass laws that impaired obligations or contracts. On the other hand, under the Tenth Amendment to the Constitution, such powers as were not specifically "delegated to the United States by the Constitution, nor prohibited by it to the States," were "reserved to the States respectively, or to the people." The creation of debt is one of the powers not delegated nor prohibited, and is clearly implied in the Tenth Amendment.

At the time the Constitution was adopted the right of an individual to sue an individual state apparently was not considered. However, in 1793, a suit was brought against the state of Georgia by a resident of North Carolina. Immediately the question whether an individual might sue a state was raised.² This case was tried before the Supreme Court and decided in the affirmative. This decision was decidedly unpopular, in view of the growing Republican sentiment at this time, and resulted in the adoption, four years later, of the Eleventh Amendment, which read as follows: "The judicial power of the United States shall not be construed to extend to any suit in law or equity, commenced or prosecuted against one of the United States by citizens of another state, or by citizens or subjects of any foreign state."

Thus the present situation is explained in so far as it inter-

² *Chisholm v. Georgia*, 2 Dall. (U. S.), 419.

ests the investor. It is true that there was probably no thought of debt repudiation when ratification of the Eleventh Amendment was sought, nor for some years after. Yet, when matters came to such a pass that some of our states found it expedient to default on their bonds, a convenient refuge from legal action in Federal courts to enforce payment was found in the Eleventh Amendment. It is this characteristic in respect to the legal status of state debts that requires that, logically, they be classified with Federal or Government bonds rather than with municipals.

In contrast to the sovereign position which the states occupy, counties, cities, towns, and other incorporated districts, such as drainage, schools, and levee districts, are creatures of the state in which they are located. That is to say, they are corporations created by the state and therefore continue their legal existence on the sufferance of the state. In fact, the charters under which municipalities exist may be amended or even repealed by the state. Accordingly, counties, towns, cities, and special districts created within a state occupy a position which is decidedly subordinate to the state from a legal standpoint.

It is the subordinate legal position occupied by municipalities, as we shall designate these divisions, that makes it legally possible for a private individual to bring suit against them without their consent. The legal action customarily brought, in case of a municipal default, consists of application to the proper court for a writ of mandamus ordering the municipal authorities to levy sufficient taxes to pay the principal and the interest of the bonds in default. In Maine, New Hampshire, Vermont, Massachusetts, and Connecticut, bondholders have the right to seize the property of any or of all the inhabitants in execution of the judgment of a court ordering payment of defaulted bonds.³

In other states the general remedy in cases of default consists of mandamus proceedings requiring the proper officers to levy a sufficient tax to pay the judgment, although there are some states in which the *public* property of the defaulting corporation may be seized. In New York state municipal prop-

³ See Raymond, W. L., "State and Municipal Bonds," p. 3, 1923, Financial Publishing Co.

erty not in public use may be so taken. In Indiana any public property of counties may be taken, and probably a similar remedy exists in the case of cities and towns. In Nebraska officers who fail in their duty to collect the necessary taxes become personally liable.⁴

It must not be assumed, however, that mandamus proceedings are always effective. In some states there is a definite limit to the amount of taxes that may be levied in any year. Thus, in Alabama, the state constitution of 1901 limits state taxation to .65 of 1 per cent of assessed valuation, while county taxes are limited to one half of 1 per cent, provided one quarter of 1 per cent additional may be levied to pay debts existing December 6, 1875, and provided that one quarter of 1 per cent additional may be levied to pay debts incurred for the construction or maintenance of necessary public buildings, bridges, or roads.⁵ In November, 1916, an amendment was passed authorizing additional taxes for school purposes in the several counties not exceeding three tenths of 1 per cent when properly approved by electors. The same rights were accorded special school districts in the state. Cities and towns are authorized to levy taxes up to one half of 1 per cent, provided 1 per cent additional may be levied exclusively for paying debts created prior to December 6, 1875. (Certain cities are permitted to levy certain limited additional taxes for special purposes, particularly for schools. These additional taxes range from two tenths of 1 per cent to 1 per cent.) By special amendment certain municipalities are permitted to levy further taxes of one half of 1 per cent for debt payment and one half of 1 per cent for any legal purpose, provided the total tax of such municipalities in no year shall exceed a total of 1½ per cent.⁶

The effect of this limitation is of special importance to the purchaser of municipal bonds. It means that, in case of default, mandamus proceedings cannot be brought to compel the tax officials to levy taxes in excess of the legal limit. If author-

⁴ *Ibid.*, p. 5.

⁵ State Constitution, 1901, Sections 214, 215.

⁶ State Constitution, 1901, Section 216, and amendments. Other states in which taxes are limited in one way or another are Arkansas, Colorado, Georgia, Idaho, Louisiana, Montana, North Carolina, Ohio, Oklahoma, South Dakota, and Utah.

ized taxes are insufficient to meet debt service and necessary expenditures of the municipality, then the default is without remedy. In justice to states that have a legal or a constitutional limit on the rate of tax that they or their municipalities may levy, it should be said that strict limits are usually found in respect to the amount of debt they may incur. This, of course, materially corrects the situation, but fails to give full protection. Many investors avoid obligations of such states and their municipalities, which accounts in part for the higher yield customarily found among such securities.

State credit in the United States.—At the present time, it is customary to regard state and municipal bonds as second only to Federal obligations in the matter of safety. Yet, during our relatively short national history, there have been flagrant examples of default and repudiation in respect to state debts, as well as some municipal defaults. No study of state bonds would be complete without giving at least passing consideration to these defaults, as well as to the underlying causes from which they resulted. A study of the causes is quite as important as a study of the facts, for it is only by eliminating the causes that we may hope to prevent history from repeating itself in these matters.

Period from 1789 to 1830.—At the time the Constitution was adopted most state debts had been assumed by the United States. For the first forty-five years of our national existence a conservative financial policy was pursued not only by our Federal government, but by state governments as well. The early Federal debt had been entirely paid off in 1835. In 1825 the aggregate debt of the states was but \$13,000,000, or \$5,000,000 below the amount of state debt at the time of national assumption in 1790. By 1830, however, the total state debt had been increased to \$26,000,000, and in 1835 to \$46,000,000.

Period from 1830 to 1840: defaults following panic of 1837.—The very period during which our Federal government was reducing its debt found state governments pursuing the opposite course. The first part of the decade from 1830 to 1840 was marked by rapid expansion in all branches of economic activity and the various states, in an effort to attract trade and industry, vied with one another in the development of roads, canals, railroads, and other public improvements.

At a time when antagonism toward further extension of Federal undertakings within states was evident, there was a strong popular sentiment toward state aid in the completion of public improvements within state borders. The result of this policy on the part of states was a period of feverish building and borrowing. The aggregate state debt which, in 1835, was but \$46,000,000, reached the then enormous total of \$175,000,000 during the next three years. The panic of 1837 and the ensuing depression which lasted well into the next decade was accompanied by widespread default and repudiation in state debts. While it is true that the West and the South were the worst offenders, it is by no means true that defaults were confined to those states.

New England states were singularly free on this score. Maine, Vermont, New Hampshire, Connecticut, and Rhode Island did not follow the trend of the times and kept themselves comparatively free from debt. Massachusetts, although its debt grew much more rapidly than did that of other neighboring states, was never in serious financial straits after the adoption of the Constitution. New York, Pennsylvania, and Maryland, on the other hand, incurred very heavy debts during this period. New York, in its effort to finance the Erie Canal and other lateral canals, piled up a total debt aggregating \$18,262,406, and by 1842 was on the verge of bankruptcy.⁷ It must be said to its credit, however, that at no time did it default, either in payment of principal or of interest. Pennsylvania and Maryland, in contrast, had a less fortunate experience. The total debt of Pennsylvania reached a total of \$37,319,395 in 1842, a large part of which had been incurred for aiding railroad and canal companies. When these undertakings proved unprofitable during and after the panic of 1837, the state was temporarily unable to pay its interest in cash. Nevertheless, cash payments were resumed in 1845 and the "relief notes" used to meet interest payments during the crisis were eventually redeemed. Since that time there has been no further difficulty in payment either of principal or interest by this state. The situation in Maryland was similar to that in Pennsylvania. During the early 30's Maryland subscribed to the stocks of various railroads, including the Baltimore & Ohio,

⁷ Tenth Census, Vol. VII, pp. 526, 537.

and lent money to and purchased stock of the Chesapeake & Ohio Canal. At the time extensive borrowing was undertaken to support such public improvements there was no system of taxation. The inevitable result, at the time of the 1837 panic, was inability to meet interest payments. The state took active measures to correct this situation, however, and, on January 1, 1848, it was able to resume interest in full.⁸

Other states became involved in the wave of speculative enthusiasm which characterized this period and suffered similar consequences. In 1840 Indiana suspended interest payments but settled all arrearages in 1847. Illinois, in 1841, experienced similar troubles, but eventually cleared its record. Michigan became involved in a too optimistic program of state aid and defaulted in 1841. Settlement with creditors was less generous here than in other states so far mentioned, in that Michigan agreed to acknowledge only so much of its debt as it had received payment for in full.⁹ Bonds that had been only partially paid for had worked their way into the hands of innocent purchasers who paid in full, yet these purchasers failed to receive the entire face value of their bonds. The record of Michigan, accordingly, is one of reasonably good faith in difficulties, but is not so commendable as that of the other defaulting states which eventually made payment in full. The record of Florida and Mississippi during this period was far less commendable than that of other defaulting states, in that both deliberately repudiated their entire debts. The territory of Florida, in 1840, refused to pay interest on an issue of bonds of the Bank of Pensacola which had been indorsed by the territory. Other bonds had been issued to supply the capital of the Union Bank of Florida, as well as of the Southern Life Insurance & Trust Company. These bonds were all repudiated by the territory, and, when the Constitution of the state was adopted, prior to its admission to the Union, the legislature was denied the power of laying any tax for the purpose of paying the bonds which were issued

⁸ Raymond, W. L., "State and Municipal Bonds," p. 114, 1923, Financial Publishing Co., also "when the state found itself unable to pay interest, it received coupons in payment of taxes. From 1844, it made partial payments on interest current and accrued. Later it funded arrears of interest with 6 per cent bonds."

⁹ *Ibid.*, p. 119.

by the territory.¹⁰ Arkansas was in default in 1841 and, as no definite attempt was made to clear up the record, it remains in default on some of its bonds to this day.

The alternate waves of enthusiasm and depression which swept the country during the decade from 1830 to 1840 were thus responsible for the first era of default in state debts. The underlying causes for this unhappy situation may be summarized under two headings: overabundant optimism; and too liberal state aid in private undertakings. Of course, there were auxiliary causes, such as the political roguery of the times, lack of financial acumen, poorly organized systems of taxation, and the like, but these were secondary. The lesson was partially taught at this time that state legislatures should restrict their activities to governmental functions, and should not embark on commercial ventures either as partners, or independently. We say "partially taught," for, while the dangers inherent in state ownership of commercial enterprises were made clear, it remained for subsequent defaults to drive the lesson home.

Second era of default from 1848 to 1860.—The second period of defaults covered the years from 1848 to 1860. During these years there were some intermittent difficulties of a less serious nature than those that occurred during the previous period. The most serious case of repudiation at this time occurred in Minnesota and resulted largely from the same circumstances that caused the widespread defaults of the 30's—state aid granted to railroads in the form of bond issues sold by the state. In 1860 an amendment to the state constitution provided that no law which called for payment of the principal or the interest of \$2,275,000 state bonds so issued should take effect until ratified by popular vote. There developed at this time a strong sentiment in favor of repudiation and it was not until the supreme court of the state held the amendment unconstitutional that this debt was compromised. Shortly thereafter an act was passed which provided for settlement of the old debt on the basis of fifty cents on the dollar in cash or 5 per cent bonds for old 7 per cent bonds and interest. Substantially all the old bonds were retired in that way.

¹⁰ Constitution, State of Florida, effective March 3, 1845, Article VIII, Section 2.

Texas defaulted on its bonds prior to its admission as a state. The entire debt at that time was estimated at \$9,647,253, to which a value of \$4,807,764 was assigned. The United States agreed to pay Texas \$10,000,000 in 5 per cent bonds for certain territory ceded to Mexico, although only \$5,000,000 was to be released until creditors of Texas had released the United States from all claims on account of customs. The second \$5,000,000 was never issued, and, subsequently, the United States appropriated \$7,750,000 in cash to satisfy creditors of Texas. In 1856 the state was declared to be out of debt.¹¹ California was the third state to default during this period, the default occurring in the year 1854. Subsequently, the supreme court of the state declared all debt in excess of the \$300,000 limit void. In 1857, however, the illegal issues were called in and adjustment bonds were issued in payment therefor.

This second period of default was not especially important. During this time there was no case of out and out repudiation, and, in two of the three cases cited, the causes for default antedate entrance of the defaulting states to the Union. By far the most important era in state repudiation may be said to cover the years from 1870 to 1884. We may neglect in our discussion of debt repudiation the fact that all obligations incurred by the seceding states in prosecution of the Civil War were never paid, for all such debts were declared illegal and void.¹²

Third era of default from 1870 to 1884.—From our standpoint the most significant event of the period, 1870 to 1884, was the actual repudiation of debt by Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Louisiana, Arkansas, and Tennessee. It is unnecessary to go into an exhaustive account of each specific case, for such a detailed discussion would serve no useful purpose here. Defaults were frequent throughout this entire period, and, while a small portion of the debts created by these states was subsequently compromised,

¹¹ Raymond, W. L., "State and Municipal Bonds," p. 164, 1923, Financial Publishing Co.

¹² The XIVth Amendment, Section 14, Constitution of the United States, reads: "But neither the United States, nor any state shall assume or pay any debt or obligation incurred in aid of insurrection or rebellion against the United States, or any claim for the loss or emancipation of any slave; but all such debts, obligations, and claims shall be held illegal and void."

by far the greater part was repudiated under the convenient refuge of illegality or invalidity. The aggregate amount of debt still outstanding, with accumulated interest to 1920, for a majority of these states, is estimated by the Council of the Corporation of Foreign Bondholders (London) as follows:¹³

<i>State and Purpose</i>	<i>Approximate Principal Outstanding</i>	<i>Interest</i>
Alabama (guaranties to railways).....	Unknown	Interest in
Arkansas (principally railway guaranties)..<	\$ 8,700,000	arrears from
Florida (banks and railways).....	7,000,000	about 40 years
Georgia (principally railway guaranties)..<	12,700,000	to about 70
Louisiana (railway guaranties, etc.).....	6,000,000	years. Esti-
Mississippi (banks)	7,000,000	mated arrears
North Carolina (railways).....	12,600,000	of interest fig-
South Carolina	6,000,000	ured at an av-
	<hr/>	erage of 6 per
Total	\$ 60,000,000	cent for 40
Estimated arrears of interest.....	\$180,000,000	years.
	<hr/>	
Grand Total	\$240,000,000	

The essential causes leading to the unfortunate period of debt repudiation following the Civil War are not difficult to find. In the first place, there had been a substantial loss in wealth in the Southern States as a result of the War itself. In 1860, for instance, the total assessed valuation of Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkansas, Tennessee, and Missouri was \$4,332,901,458, while in 1880 the assessed valuation of these same states, including West Virginia, was \$2,232,790,584.¹⁴ This reduction may be accounted for, in part, by the emancipation of slaves, yet there was a real loss in values from the standpoint of raising taxes. Another and perhaps more important cause for repudiation is found in the character of the governments in these states during the reconstruction period following the War. These states were overrun by cheap and dishonest politicians who descended from the North and who, by means of the newly franchised negro voters whom they controlled, had themselves elected to important state offices. With a ruthlessness that outclasses any political scandal of the

¹³ 48th Annual Report, Council of the Corporation of Foreign Bondholders, 1921.

¹⁴ Tenth Census, Vol. VII, pp. 4, 16.

present century these "carpet-baggers" engaged in all kinds of speculation and dishonesty. In many cases a large part of the debts incurred in the name of the Southern States during this period was created by dishonest politicians who carried away the proceeds. It is little wonder that the native population, outraged in other ways during this period, felt under no moral obligations to meet these debts after the carpet-bagger was finally driven out. Although it is true that the South may be absolved in part from the censure that it has received on account of the wholesale debt repudiation of this period, it is nevertheless true that some of the funds represented by the bonds disposed of were received by states and were used in their interests. It is also true that during this period frequent borrowings were undertaken for state aid of private undertakings. Again, the same difficulties arose that caused the first period of defaults; the optimistic predictions regarding the earning power of the sponsored projects failed to materialize, thus leaving the state saddled with a heavy debt to be met by taxation.

Virginia-West Virginia controversy.—We shall not go into a history of the debt experiences of each state, although the West Virginia controversy is of sufficient interest to warrant passing attention. When the constitution of West Virginia was adopted in 1863 it agreed to assume an equitable portion of the public debt of Virginia as of January 1, 1861. A long dispute arose as to what West Virginia's share actually was, the state of Virginia claiming that, since West Virginia acquired one third of the territory of the old state, it ought to assume one third of the debt, or \$15,239,371. West Virginia, however, claimed that her share did not exceed \$953,360. In 1911 the United States Supreme Court held West Virginia liable for a principal sum of \$7,182,507, leaving the matter of interest to be adjusted. After further controversy the Supreme Court appointed a special master to take additional testimony and, in 1915, the findings of the master were sustained to the effect that the state of West Virginia was liable for the sum of \$12,393,929.50, with costs divided between the two states. Subsequently, Virginia found it necessary to petition for execution of judgment against West Virginia and, after some delay, the legislature of the latter state adopted resolutions providing for a settlement of this debt.

Not until 1919, however, was the controversy finally settled by delivering to the Chairman of the Debt Commission \$12,366,500, the amount then due in settlement.¹⁵

This brief survey of state debts leads to the inevitable conclusion that, when a state becomes indebted for an amount that is excessive in relation to property values, the situation is dangerous. The pinch of heavy taxation is too easily relieved by resort to technicalities in an effort to prove a burdensome debt illegal and void. Nor is there any adequate remedy open to the unfortunate bondholder in such cases. The best protection, therefore, is the development of a code of honor and ethics that will make such a situation as existed fifty years ago impossible, and also the restriction of debts to moderate sums in relation to population and values.

Customary restrictions regarding state debts.—The early experiences of our states in debt matters has at least taught the necessity of rigid constitutional restrictions on the amount of debt that may be created and the purposes for which borrowing may be undertaken. Practically every state to-day has constitutional provisions regarding borrowing. The more important restrictions customarily found may be summarized as follows:

1. Permission is generally given to borrow without limit for purposes of repelling invasion, suppressing insurrection, or defending the state in time of war.

2. Permission is given to borrow up to a limited amount in anticipation of revenues in order to meet casual deficiencies in revenues.

3. Permission is given to issue bonds or notes for the purpose of refunding existing debt.

4. Borrowing is frequently allowed for certain special purposes definitely stated in the acts authorizing the loan, provided arrangements are made at the same time for paying interest and principal of the bonds. Frequently authorization of the loan is required to be ratified by popular vote.

5. On the other hand, the lending of state credit to private enterprises, or borrowing for the purpose of engaging in most

¹⁵ For complete account see Raymond, W. L., "State and Municipal Bonds," p. 173 ff., 1923, Financial Publishing Co.

works of internal improvement, or loaning state credit to political subdivisions is prohibited.¹⁶

Present status of state borrowing.—An era of conservatism in state financing followed the third period of default and repudiation which may be said to have culminated by 1880. At the same time that our Federal government was reducing its debt, there was a gradual decrease in state debts, the total net debt standing at only \$211,210,000 in 1890.¹⁷ From that time until the World War there was a moderate increase in state borrowings, but in no case was the amount of debt incurred at all alarming. Since the World War, however, there has been a decided increase in state borrowing, the total net amount of state debt in 1926 amounting in all to \$1,327,514,422. This increase is in line with the general growth in municipal borrowing which occurred during the years following the War, although it is by no means true that all states have participated equally in this movement. The table on the following page shows the total net debt of each state as of 1926¹⁸ and 1912¹⁹ as well as the per capita debts for those years.

Causes for recent increase in state debts.—The rapid increase in state debts since the World War is due to a variety of causes. Possibly the enormous growth in Federal borrowing, made necessary by the War, had its effect in stimulating similar operations on the part of states hitherto reluctant to add to their obligations. To-day we are accustomed to speak in terms of billions where a decade or two ago millions seemed large. A more direct result of the War is found in borrowing for the payment of soldiers' bonuses. Many states²⁰ put out large bond issues in the years immediately following the War for this purpose. Little criticism can be made against this action, where the amount involved was reasonable, the distribution of funds, equitable, and where proper means were

¹⁶ The four states, New Hampshire, Vermont, Massachusetts, and Connecticut, have no constitutional restrictions in regard to the creation of debt.

¹⁷ "U. S. Statistical Abstract," 1926, p. 215.

¹⁸ U. S. Dept. of Commerce, Bureau of the Census, "Financial Statistics of States," 1926, pp. 124, 125.

¹⁹ "U. S. Statistical Abstract," 1926, p. 215.

²⁰ Among the states which put out large issues for soldiers' relief may be enumerated New York, New Jersey, Ohio, Illinois, Michigan, Minnesota, Iowa, Missouri, Kansas, Washington and Oregon.

COMPARISON OF STATE DEBTS, 1926 and 1912

<i>State</i>	<i>Total Net Debt</i> (in \$1,000's)		<i>Per Capita Debt</i>	
	1926	1912	1926	1912
Alabama	\$ 34,439	\$13,132	\$13.67	\$ 5.95
Arizona .....	.....	3,065	....	13.28
Arkansas	3,116	1,236	1.65	.76
California	100,390	10,223	23.63	3.83
Colorado	12,325	3,174	11.66	3.70
Connecticut	3,604	7,111	2.27	6.12
Delaware	8,206	763	34.33	3.70
Florida	91	619	.07	.77
Georgia	9,370	6,934	2.99	2.57
Idaho	4,705	2,143	9.07	5.92
Illinois	138,633	2,272	19.39	.39
Indiana	1,689	1,350	.54	.49
Iowa	18,214	357	7.52	.16
Kansas	25,789	243	14.19	.14
Kentucky	2,305	4,441	.92	1.90
Louisiana	14,688	13,546	7.65	7.89
Maine	17,554	1,255	22.28	1.67
Maryland	22,491	7,334	14.28	5.56
Massachusetts	23,868*	79,551	5.69*	22.78
Michigan	75,845	7,089	17.48	2.41
Minnesota	12,228	1,345	4.65	.63
Mississippi	16,566	4,460	9.25	2.41
Missouri	68,006	4,671	19.44	1.40
Montana	4,785	1,513	7.00	3.73
Nebraska .....	.....	374	....	.31
Nevada	1,292	608	16.69	6.70
New Hampshire	1,830	1,956	4.04	4.50
New Jersey	57,351	642	15.76	.24
New Mexico	3,827	1,218	9.92	3.41
New York	222,554	86,205	19.81	9.05
North Carolina	119,163	8,059	42.03	3.54
North Dakota	3,853	820	6.01	1.29
Ohio	20,761	5,142	3.18	1.05
Oklahoma	3,367	6,931	1.44	3.74
Oregon	38,111	31	43.61	.04
Pennsylvania	83,711	....	8.78	....
Rhode Island	11,060	5,127	15.98	9.02
South Carolina	5,886	6,190	3.22	3.98
South Dakota	17,172	370	25.07	.58
Tennessee	17,417	11,812	7.09	5.32
Texas	4,413	4,656	.84	1.14
Utah	7,184	1,430	14.11	3.62
Vermont	1,754	570	4.98	1.58
Virginia	25,204	22,043	10.07	10.46
Washington	11,332	1,556	7.40	1.21
West Virginia	47,725	....	28.85	....
Wisconsin	1,764	2,251	.62	.93
Wyoming	1,907	122	8.15	.77
Grand Total	\$1,327,514	\$345,942	\$11.46	\$3.57

* Present census practice excludes from the net debt of Massachusetts special assessment debt of certain cities which is only a contingent debt of the state.

adopted at the time for repayment of the debt. In any event, it is quite unlikely that a recurrence of further borrowing on this account will take place.

Another reason for recent increases in state borrowing is found in the extraordinary development of the automobile and the motor truck industry. Accompanying this growth has been an insistent demand for more and better roads. Finally one must consider the general advancement in standards of living and national income that has been going on during the present century. These factors have led to a demand for more expensive buildings, better roads, and better service in the various activities which logically belong to state government.

Present tendencies in state financing.—On the other hand, there appears in certain quarters a tendency for states to re-enter the field of private enterprise. South Dakota has used her credit extensively within recent years for the purpose of extending rural credits. Under the Rural Credits Amendment to the Constitution in 1916 and 1918 and subsequent acts, the state was authorized to borrow sums not to exceed \$50,000,000 for the purpose of making loans on farm mortgages. Up to 1927 \$45,500,000 had been borrowed for this account. North Dakota, under the auspices of the Nonpartisan League, a socialistic farmers' party, sold, in 1919, some \$2,000,000 of bonds in order to provide capital for the Bank of North Dakota. At this time \$5,000,000 mill and elevator series were authorized and \$10,000,000 real estate bonds. Subsequently \$25,000,000 real estate bonds were authorized. Up to 1927 \$4,500,000 of bonds had been issued to furnish the necessary funds for the erection and operation of state owned mills and grain elevators and \$15,359,000 for establishing rural credits. At the close of 1927 there were also outstanding some \$7,700,000 bonds that were issued to provide funds to lend on state owned utilities, enterprises, or industries, supposedly self-supporting.²¹ These are called "real estate" bonds. The state bank enterprise has so far made a very poor showing. In fact, at the close of business in 1924, the bank was actually insolvent, in that there was due from closed banks at that time \$12,470,858, or more than the amount of capital

²¹ For classification of North Dakota's debt and validating acts see *Commercial and Financial Chronicle*, various State and City Sections, and a critical analysis of State debts, National Association of Mutual Savings Banks, 1927.

and surplus, which means that the principal and interest of the bonds issued in connection therewith will, in all probability, have to be paid partially, at least, from additional taxes.²² Massachusetts recently guaranteed for ten years dividends on the stock of the Boston Elevated Railway Company as well as the principal of \$4,000,000 serial bonds issued by the Eastern Massachusetts Railway Company.²³ Whatever the exigencies leading to this type of state aid, the entire principle is wrong. It was exactly this type of financing that led to the widespread defaults and repudiation that characterized the 30's and 70's. The functions of the state center around the exercise of those sovereign powers ordinarily performed by governments and not delegated to our national government: legislative and administrative control of local problems; building and maintenance of good roads; policing; supervision of local governments; maintenance of state educational institutions; and so forth. An active participation in private enterprises through the use of state credit has almost invariably led to gross mismanagement and financial loss sooner or later.

Financial tests of state credit.—Important as the matter of good faith becomes in purchasing state bonds, it is also true that the financial aspects of the state require attention. After all, one of the most impelling forces that determine whether a state shall meet its obligations is the relative hardship incurred in the process. Where obligations are small in relation to property values and population, there is no impelling reason for raising questions of validity or regularity in respect to the state's obligations, nor is there danger that revenues will prove insufficient to meet necessary expenses and debt service. On the other hand, where obligations are heavy, correspondingly high taxes become necessary to meet expenses, and interest and principal. Such a situation is undesirable, particularly if the borrowing fever of the population is allowed to continue unabated. We shall, therefore, consider some of the customary tests that are applied in analyzing the financial status of state bonds.

Ratio of debt to assessed values.—The first test to be considered is the relation of net indebtedness to the aggregate

²² Annual Report, Bank of North Dakota, year ended December 31, 1924.

²³ Acts: Massachusetts Special Acts, 1918, Chapter 159, Sections 9 and 11. Massachusetts Special Acts, 1918, Chapter 188, Sections 9 and 10.

assessed value of property within the state. Most states raise the bulk of their income through taxes based on property, real and personal. Where a property tax is employed, it is customary to assess it at the same time that the local county and municipal tax is assessed, the state tax in reality being assessed by the city or the town and remitted to the state on the basis of the proportion of the total taxable property of the state located within the municipality. The state's rate, therefore, is constant for each town. For this reason, it is often advantageous for the city to undervalue property within its limits but to raise its tax rate. In this way, the same amount is collected by the city for city purposes, but its contribution to the state is reduced. Where this is general, the figure representing the assessed value of property within a state is below actual values. This fact is generally noted in connection with debt statements, and, where it exists, an adjustment is required in order to get the true value of the property within the state. Thus, the state of Alabama showed, in 1926, an assessed valuation for all property of \$1,071,205,516, the basis of assessment being 60 per cent. In ascertaining the relation of debt to assessed value for comparative purposes, therefore, one would be justified in raising this amount to 100 per cent by dividing by 60 per cent.

Some states distinguish between real and personal property and assess a lower tax on personal property than on real estate. The reason for doing this is to elicit a declaration of personal or intangible property, which otherwise would escape taxation. It is, of course, impossible for the owner of real estate to escape a property tax, for such assets cannot be concealed from the assessor. The owner of stocks or bonds, however, can often conceal such property, and, when making a return, neglect to enter it. Such concealment is not without good reason, for, where there is no distinction between real and personal property, the general tax rate, if applied to intangibles, is generally excessive. If \$25 per thousand is the current rate, applicable to tangibles and intangibles, it will be noted that this is equivalent to $2\frac{1}{2}$ per cent of the value of the property. In the case of a 5 per cent bond one half of the income would thus be collected in the form of a tax. The personal property tax, therefore, where it is employed, is much lower than the rate on tangible property. In Pennsylvania, the rate

is four mills (that is, \$4 per \$1,000 market value); in Connecticut, 4 mills; in Maryland, $4\frac{1}{2}$ mills; in Rhode Island, 4 mills.

In addition to property taxes other state revenues are made available through income taxes,²⁴ inheritance taxes, gasoline taxes, and license fees for registering and operating motor vehicles, although, generally these sources of income are subordinate in importance. Where the state relies on a property tax for the bulk of its revenue, a significant test of the extent to which borrowing has been extended lies in the ratio of debt to the real value of assessable property. Where this ratio does not exceed 3 per cent of the true value of assessable property, it may be considered that the debt is within conservative limits. Undoubtedly, 3 per cent looks like a very small ratio at first, but it must be recalled that the same property that furnishes revenues for state purposes is also required to meet the principal and interest payments on county and city debts, to say nothing of the debts of special districts that are authorized in many states for school, levee, drainage, fire, and other purposes. In 1919, the highest rate of debt to assessed value for any state was found in the case of Tennessee, whose ratio was 2.31. In 1925, Wyoming stood at the head of the list, with a ratio of 9.02 per cent, based on actual assessed valuation, or about 5.4 per cent, based on corrected valuations. In this year there were seven other states with a ratio of over 3 per cent.²⁵ This increase cannot continue indefinitely without bringing the debts of some states to a point that passes conservatism. It is to be hoped that the high point in the present movement has been reached and that subsequent increases in state debts will not exceed, or will fall below, the rate of increase in taxable property.

Per capita debt.—The net debt per capita is another test that may be used to supplement the previous ratio. It is not necessarily true that the state having the largest ratio of debt

²⁴ New York, North Carolina, Massachusetts, Wisconsin, Missouri, North Dakota, Delaware, Virginia, South Carolina, Mississippi, Oklahoma and Oregon had income taxes in 1926.

²⁵ Delaware 3.01%
 Illinois 3.36
 Arizona 3.38
 Minnesota 4.22

North Carolina 4.77%
 Oregon 5.43
 South Dakota 3.39

to assessed valuation will also have the largest per capita debt. States like New York, Massachusetts, Pennsylvania, and New Jersey are wealthy in comparison to such states as the Dakotas, Montana, Idaho, or Utah. Accordingly, it would be possible for the former states to carry a heavier per capita debt without inconvenience than for the latter to do so.

Economic resources.—A complete survey of the economic resources of the issuing state is desirable when purchasing state bonds. Such a study will cover the resources of the state, the character of its population, the nature of its industries, and other sources of wealth, and furnish a valuable check on assessed values. While it is true that the assessed valuation gives the value of the property available for taxation, the wide variation in rates of assessment makes statistical analysis on this basis unreliable. The mere fact that the law generally requires assessment at market or true value does not mean that the two approach each other in practice, for the interpretation of the law is often left to local assessors. In some states, boards of equalization attempt to remedy this situation, but in such cases the result is generally the universal adoption of a scale of values admittedly below 100 per cent of actual or true values. For this reason, it is advisable to resort to a study of census figures in an effort to ascertain the actual value of productive property, as well as production by principal branches of undertakings. Let us consider, for example, the state of Missouri. This state, in 1926, had a net indebtedness of \$68,006,102, or \$19.44 per capita. The assessed valuation of the state for tax purposes was \$4,846,684,834, which gave a ratio of debt to assessed valuation of 1.41 per cent.²⁶ As against this total valuation the census figures for 1919 showed that capital invested in manufacturing enterprises was \$1,594,208,000. Figures for 1923 show that the total value of industrial output was \$1,547,188,617, while in that same year the value of agricultural products was \$675,628,575. The value of land and buildings used for agricultural purposes in 1924, was \$2,013,565,747. The combined value of capital invested in industry and agricultural enterprises in 1924 (using 1919 data for investment in manufactures), therefore, was around \$3,608,000,000, against an assessed valuation of \$4,846,-

²⁶ For data see Financial Statistics of States, Bureau of Census, 1926.

684,834. The reported value of output for both manufacturing and agricultural enterprises was \$2,222,817,192. In view of this wealth and earning power, there can be no question regarding the ability of the state to meet its obligations when due, so long as they are within the same conservative limits as now maintained.

The nature of the industries within a state should also be considered. Where the state is limited to one industry, property values are less stable than in states with diversified industries. States which are engaged principally in mining are also subject to certain weaknesses not found in other states. Perhaps the best combination is the presence of agriculture and manufacturing, although states with large commercial, trading, and financial interests also offer very excellent security.

Government revenues and expenses.—Another basis for testing the financial standing of state debts involves an analysis of governmental revenues and expenses. It is, of course, very important that current revenues cover current expenses, exclusive of permanent improvement costs. Up to a certain point it may be good financial policy to provide funds for permanent improvements by borrowing; but, where this is done, proper provisions should be arranged to retire the debt during the life of the property.

It is possible to reduce expenses and revenues of a given state to a per capita basis, in order to make data comparable for several states. The following analysis of the revenues and expenses for the state of Massachusetts will exemplify how such a study may be made: Data for such studies may be found in current reports issued by the Department of Commerce, from the Census, and from Financial Statistics of States, issued by the Census Bureau annually.

EXPENDITURES AND REVENUES (MASSACHUSETTS)

The payments for maintenance and operation of the general departments of the state for the fiscal year ending November 30, 1925, amounted to \$38,552,955, or \$9.30 per capita, as compared with \$10.29 in 1924 and \$6.64 in 1917. The total payments including those for outlays were \$46,191,099.

The total revenue receipts for the same period were \$50,655,017, or \$12.22 per capita. This was \$10,163,358 more than the total payments of the year, exclusive of those for permanent improvements, and \$4,463,-

918 more than the total payments, including those for permanent improvements. The excess of revenue receipts was absorbed in the reduction of debt obligation, the purchase of investments, and increased cash balances.

Property and special taxes constituted 49.6 per cent of the total revenue for 1925 as compared with 54.4 per cent for 1924 and 66.3 per cent for 1917. The per capita property and special taxes were \$6.06 in 1925 as compared with \$6.65 in 1924 and \$5.49 in 1917. Earnings of general departments or compensation for services rendered by state officials constituted 6.1 per cent of the total revenue for 1925, as compared with 6.1 per cent for 1924 and 9.4 per cent for 1917. Business and nonbusiness licenses constituted 25.4 per cent of the total revenue for 1925 as compared with 20.4 per cent for 1924 and 10.2 per cent for 1917. (Receipts from motor vehicle licenses were \$9,843,901 in 1925.)

Taxation of state bonds.—The tax situation in respect to state bonds differs somewhat from government obligations. Under our Constitution, government obligations are exempt from all state and municipal taxes. This is necessary if the sovereignty of the Federal government is to be maintained. On a similar theory, state and municipal bonds are exempt from all Federal taxes; but such bonds may or may not be taxed by the state in which they are issued and they may be taxed by another state if located within the taxing state, or if the owner resides within the jurisdiction of the taxing state. The same exemptions that apply to the taxation of state or municipal bonds themselves apply to the income from such bonds. The Sixteenth Amendment to the Federal Constitution gives Congress power "to lay and collect taxes on incomes, from whatever source derived, without apportionment among the several states, and without regard to any census or enumeration." While the question as to whether the income from state and municipal bonds is taxable under the Federal income tax has never been passed on by the Supreme Court, nor has any attempt been made by Congress to tax such income, it is generally felt that such an attempt would be declared unconstitutional. On the other hand, income from the bonds of one state is taxable where such bonds are held by the resident of another state. Thus the income from Connecticut bonds is taxable, where they are held by a resident of Massachusetts. Many states exempt their own obligations from all local and

state taxes, thus enabling them to borrow money more cheaply than would otherwise be the case.

Market for state bonds.—The market for state bonds is relatively restricted, the bulk of such bonds being held by institutions, such as savings banks, insurance companies, and trustees, that are regulated by law as to the types of investments they may purchase. The price of state issues, as a class, will of course fluctuate with money conditions, yet at any given time there will be rather wide variations in yield among state bonds. This may be accounted for partly because of the credit which the issuing state happens to enjoy. If we consider the present market (1928), when the average yield on high grade municipals is between 3.90 and 4.05 per cent, we will find South Dakota bonds selling on a 4.15 basis, North Carolina issues on a 4.05 basis, and Illinois issues on a 3.80 basis. On the other hand, the issues of states offering local tax exemption enjoy what is known as a special market and such bonds will sell above prices at which the bonds of other equally well secured states sell without special exemption. Thus Massachusetts bonds will sell on 3.60 basis, while Illinois bonds sell on a 3.80 basis. The differences in yield accounted for by varying financial strength is small, and speaks well for the present high standing which this class of securities now enjoys in the minds of the investing public.

CHAPTER XXV

CIVIL OBLIGATIONS—MUNICIPAL BONDS

Municipalities, how created.—Instead of occupying a position of sovereignty, municipalities are corporations created by the state and are subject to control by the legislature of the state in which they are situated. In fact, they owe their existence to charters granted by the state, either as the result of a special act or of a general law. Secondly, they possess and can exercise the following powers only: those expressly granted; those necessarily or fairly implied in, or incident to, the powers expressly granted; and, finally, those which are indispensable to the declared object and purpose of the corporation. It so happens in practice that, ordinarily, the state grants to municipalities the following powers: the right to make regulations necessary to the health, safety, welfare, and comfort of the community (known widely as the police power); the power of taxation; and the power of eminent domain. It is not generally held that the power to borrow exists, unless specifically mentioned in the legislative or constitutional instrument under which the municipality exists. Where the power is actually granted it is also regulated. In other words, municipalities derive their borrowing powers from the state and are limited by the state in the exercise of such powers.

Regulation of municipal borrowing.—From the investors' standpoint, therefore, it is important to know what limitations are placed on the borrowing operations of the municipality. Are these regulations adequate to protect the investor, by preventing unwise use of credit and an unwarranted expansion in borrowing operations, or are they so set up as to be of little value? As an example of the completeness with which municipal debt may be regulated, there is presented here the more important provisions of the Pierson Bond Act,¹ under which

¹ Taken from *Commercial and Financial Chronicle*, "State and City Supplement," June, 1927, p. 103.

the borrowing operations of municipalities in the state of New Jersey are regulated. This act provides substantially as follows:

Power to Issue Bonds and Notes.—Power is given to issue bonds for any public improvement for which the municipality or county may lawfully make or for any other purpose for which it may lawfully appropriate money, except to pay current expenses or fund debts incurred after March 22, 1916, for current expenses or refund bonds issued after that date. Power is also given to issue temporary bonds or notes temporarily to finance any purpose for which bonds may be issued under the Act. Such temporary obligations may run not longer than six years after such purpose has been carried out, unless the levying of special assessments for improvements for which the obligations are issued is delayed by litigation.

Term of Bonds.—Bonds must mature (a) within the probable life of the improvement or property for which they are issued, to be determined by the bond ordinance or resolution, but not to be deemed greater than the maximum period specified in the Act for such an improvement or property (a period ranging from 5 to 50 years); or (b) if the bonds are to fund debt incurred before March 22, 1916, for unascertainable purposes, within 15 years; or (c) if for refunding, within 20 years; or (d) if for more than one such purpose, within the average of the periods assigned, to the several purposes, taking into consideration the amount of bonds for each purpose; or (e) if issued in anticipation of the collection of special assessments, within a period ending not more than two years after the last installment of the assessment will become delinquent.

Serial Bonds.—All bonds must mature in annual installments beginning not more than two years after the date of the bonds, and no installment can be more than 50 per cent greater than the smallest prior installment.

Sale of Bonds.—Bonds cannot be sold below par. If the amount of the issue exceeds \$10,000, they must be sold at public sale, unless sold within 30 days after a public sale at which no bids are received, or unless the sale is to the municipal sinking fund or insurance fund commissioners. Only such an amount of the bonds can be sold as will produce a sum less than \$1,000 in excess of the amount of money necessary to be raised. In case of public sale, advertisement must be made in a local newspaper and also in a financial paper in New York City or Philadelphia. Temporary bonds or notes may be disposed of privately.

Debt Limits.—Except as noted below, the Pierson Bond Act prohibits a municipality from passing an ordinance or resolution authorizing bonds or notes under that Act in an amount which, with the amount

of all evidences of indebtedness then outstanding, or to be issued under previous authorizations, exceeds 7 per cent of the average of the three next preceding assessed valuations of taxable real property. In a county the limit is 4 per cent. But in order that the statute may not work a hardship on municipalities heavily indebted at the time of passage of the Act, it permits municipalities to exceed the 7 per cent limit so long as the bonds and notes issued or authorized under the Act after Dec. 31, 1916 (including debt so incurred and paid), do not exceed 2 per cent of the average assessed valuation of taxable real property for the years 1914, 1915, and 1916. The statute prescribes in great detail the method for computing and determining net debt under these limitations. The chief financial officer of the municipality or county is required to file annually with the clerk of the municipality or of the county board of freeholders, as the case may be, an "Annual Debt Statement," showing the debt situation as of the close of the preceding calendar year; and he must file a "Supplemental Debt Statement," showing the changes since the last annual statement, before the passage of any ordinance or resolution authorizing bonds or notes to which the debt limitations apply. The debt limitations do not apply to the issuance of bonds or notes for funding, refunding, water supply, or the construction or reconstruction of dikes, bulkheads, jetties or other devices on the ocean or inlet fronts to prevent the encroachment of the sea, including improvements to restore property damaged by the sea, or for the construction of boardwalks, pavilions, piers, bathing houses or other devices along the ocean front, or "for the acquisition of lands or interest in lands along the ocean front, or for the improvement thereof or for the construction of buildings thereon." Nor do they affect the incurring of debt under other laws, such as debts for schools or current expenses. But some of these exempted debts must be considered (as indicated below) in ascertaining the power to become indebted under the Act for other purposes. The net debt subject to the limits is computed by ascertaining the gross amount of all bonds or other evidences of debt outstanding, or authorized but not yet issued, or about to be authorized by the ordinance or resolution in connection with which the computation is made, exclusive of debts for current expenses of the current fiscal year, and by deducting from such gross amount (1) the following portions of the gross debt, viz.: (a) debts for self-sustaining utilities (not for support or maintenance), in so far as they do not exceed 3 per cent of the average assessed valuation of taxable real property for the next preceding three years; (b) debts for schools, in so far as they do not exceed 6 per cent of such average assessed valuation; (c) debts for water supply; (d) debts for ocean or inlet front improvements referred to above; (e) debts for certain sewer improvements in boroughs (Laws, 1919, Chapter 51); (f) debts for

certain highway improvements in counties (Laws, 1918, Chapter 183); (g) certain county bonds payable out of motor vehicle funds received from the State (Laws, 1921, Chapter 164); (h) debts for certain self-sustaining electric light plants (Laws, 1921, Chapter 235, and Laws, 1924, Chapter 246); (i) municipal debts for eliminating grade crossings, in so far as such debts do not exceed 2 per cent of the average assessed valuations of taxable real estate for 1920, 1921, and 1922 (Laws, 1926, Chapter 281); and (j) municipal debts for "joint" sewers (Laws of 1925, Chapter 56), municipal debts for libraries (Laws of 1925, Chapter 241); also (2) the following assets, to the extent that they are applicable to the payment of any part of the gross debt not deducted as above stated, viz.: (a) uncollected special assessments levied or to be levied; (b) funds in hand or to be derived from the issuance of bonds or notes included in the gross debts; and (c) uncollected taxes levied to pay gross debt; and (3) also other assets to the extent that they are not included in the foregoing assets, viz.: (a) unpaid taxes not more than three years in arrears, and (b) amounts owing to the municipality on account of improvements for which any part of the gross debt, not deducted, was incurred or authorized.

Procedure for Issuing Bonds.—In boroughs and townships bonds cannot be issued without a vote of the people if protests against the issue are filed by one third of the governing body or by taxpayers representing 10 per cent of the assessed valuation of property. In other municipalities no election is provided for by the Pierson Bond Act; but the so-called Home Rule Act (Article 37, Section 24) apparently makes all bond ordinances subject to referendum if demanded by taxpayers.

Validation of Bonds.—The Act provides that the validity of bonds shall not be questioned in any suit commenced after the lapse of 20 days from the first publication of the ordinance or resolution authorizing them, unless issued in violation of the referendum provisions. In the case of *Dale vs. Borough of Bayhead*, bonds were sustained by reason of this provision. The Act also declares that bonds reciting that they are issued under the Act shall be incontestible.

School Bonds.—The issuance of bonds and other obligations for school purposes is authorized and regulated by the general School Law of 1913 (Comp. Stat. 1910, p. 4724), as amended. School bonds must mature serially as provided in the Pierson Bond Act, and within the maximum period specified in the School Law for the class of improvement or property for which they are issued, ranging from 10 to 40 years. Bonds for refunding school bonds must mature within 20 years and in annual installments, equal as nearly as practicable. If the bonds are issued for several purposes they must mature within the average of the periods assigned to the several purposes, taking into consideration the amount of bonds for each purpose, such average period to be conclusively determined by the governing body. The method of sale of bonds under

the School Law is substantially the method prescribed by the Pierson Bond Act. The amount of school bonds in school districts governed by Article VI of the School Law is limited to 6 per cent of the assessed valuation of property, but additional bonds up to 9 per cent may be issued if approved at an election. There is no limit in districts governed by Article VII. Bonds of the latter districts cannot be attacked in litigation instituted after the lapse of 20 days after the election at which they are authorized.

Almost without exception there will be found, either in the state constitution or in some special legislative act of the state, limitations covering not only the purposes for which bonds may be issued by municipalities, but the amount of debt which the municipality may incur. The table on pages 654 and 655 shows the general limitations placed on municipal debts by each state, in terms of percentages of assessed valuations:

Some of the other restrictions frequently found refer to the manner in which debt may be incurred. For example, many states require that all proposed bond issues first be referred to the voters for approval, except in the case of temporary loans for anticipating taxes. The length of time for which bonds may run is frequently specified, as well as the form in which they may be issued. In this connection, it is interesting to note that many states are now requiring that all bonds be issued in serial form, in order to do away with the less desirable method of retirement known as the sinking fund method.

Legality of issue.—The existence of these various and rather detailed limitations on the borrowing powers of municipalities, as well as further prescriptions as to the form and procedure by which municipal bonds may be issued, creates a complex legal situation that is of no small importance to the investor. A bond that has been issued without complying with all the requirements set forth in the state constitution and with the legislative acts regulating municipal bond issues in the state may be held invalid. It follows that, if a negotiable instrument is void in its inception, it has no legal existence and, therefore, is nonenforceable. In other words, a municipality cannot make a promise or enter into a contract which is enforceable in court unless the sovereign state has first granted it the power to do so. And, further, the municipality, in the exercise of its power to create debt, must issue its bonds in

MUNICIPAL DEBT LIMITATIONS

<i>State</i>	<i>Counties</i>	<i>Cities</i>	<i>Towns</i>	<i>School Districts</i>	<i>Additions and Exceptions</i>
Alabama	3½%	5%-7%	5%-7%	...	3' additional water, gas, electric sewers.
Arizona	4%-10%	4%	4%	6%	15% additional water, light, sewers.
Arkansas	Counties and cities cannot incur interest bearing indebtedness. Financing done by discount warrants. Districts may issue bonds.				
California	5%	15%	15%	5%	
Colorado	0.6%-1.2%	3%	3%	3½%-5%	Counties with assess. val. more than \$5,000,000, 0.6%. Counties under, 1.2%. No limit water.
Connecticut	5%	5%	5%	5%	Water, gas, electric not included.
Delaware	Debt restricted by specific acts of legislature or city charter—details not available.				Towns having charters limit debt by charters. 7% additional for lighting.
Florida .....	...	10%	10%	...	Loans require sinking fund all issues.
Georgia	7%	7%	7%	7%	Water, light, power not included.
Idaho .....	...	10%	10%	4½-6%	County road extra.
Illinois	5%	5%	5%	5%	Counties only limited 1% for bridges. 10% additional cities and towns for special improvements.
Indiana	2%	2%	2%	2%	Schools may double indebtedness by special permission.
Iowa	5%	5%	...	5%	3% additional for roads.
Kansas .....	...	15%	15%	3%-5%	
Kentucky	2%	10%	5%	...	
Louisiana	10%	10%	10%	10%	
Maine .....	...	5%-7½%	5%-7½%	...	
Maryland	Debt restricted by specific acts of legislature or city charter—details not available.				Cities 2½% additional. Towns 5% additional for special purposes.
Massachusetts .....	...	2½%	3%	...	
(Boston not included)					

Michigan	3%-5%	8%-10%	10%	15%	Drainage, water, electric, etc., not included.
Minnesota	10%	10%	...	...
Mississippi	10%	10%	10%	10%	
Missouri	5%	5%	5%	...	10% additional for water and sewers.
Montana	5%	3%	3%	3%	These limitations generally modified by special acts
Nebraska	10%	5%	10%	30%	limiting bonds for special purposes.
Nevada.					limiting bonds for special purposes.
New Hampshire .....	...	5%	5%	5%	(Based on average of 3 preceding valuations.)
New Jersey	4%	7%	7%	7%	Water, sewers, not included.
New Mexico	4%	4%	4%	6%	Water not included.
New York	10%	10%	...	...	Water, gas, electric light and power not included.
North Carolina	8%	8%	8%	5%	Debt limit in excess of 5% by special acts.
North Dakota	5%	5%	5%	5%	Water not included. Anticipation notes excluded;
Ohio .....	...	5%	5%	6%	also bonds issued prior April 12, 1902, and bonds
Oklahoma	5%	5%	5%	5%	refunding issues prior April 12, 1902. Certain city
Oregon	6%-8%	...	...	5%	charters allow other deductions.
Pennsylvania	7%	7%	7%	7%	Water, electric, not included.
Rhode Island .....	...	3%	3%	3%	Port Districts 10%; cities generally limited to 15%
South Carolina	8%	8%	8%	8%	by charter. All counties limited to \$5,000 indebted-
South Dakota	5%	5%	5%	5%	ness, except 6% for roads. Certain counties 2%
Tennessee.	10%-15% (roads)	...	...	...	additional for other purposes.
					Philadelphia 10%.
					Total direct and indirect debt "upon any territory
					of this State" limited to 15%. (Relates to over-
					lapping debts.)
					Debt restricted by specific acts of legislature or
					city charter—details not available. Charters most
					cities provide debt limit.

MUNICIPAL DEBT LIMITATIONS

<i>State</i>	<i>Counties</i>	<i>Cities</i>	<i>Towns</i>	<i>School Districts</i>	<i>Additions and Exceptions</i>
Texas	25% (District Bonds)				
	Except for county roads, bonds not limited by percentage of assessed values but by tax rates which follow:				
	Cities 5,000 or more \$2.50 per \$100 valuation for all purposes, debt, and running expenses.				
	Cities under 5,000 limited to \$1.50 per \$100 valuation.				
	Counties 25c per \$100 valuation general and current expenses, 25c for construction of permanent improvements, 15c roads and bridges, and 15c additional for road and bridges maintenance, although county tax in any one year cannot exceed 80c or 8 mills for all purposes except for road improvement bonds.				
	Common schools \$1 per 100 valuation, half of which for sinking fund to retire bonds.				
	Independent schools \$1.50 per \$100 valuation, of which 50c for bonds.				
	Constitution also provides annual sinking fund all bonds 2½% levied annually. Bonds automatically limited by tax and sinking fund provisions to maturities of not more than 40 years.				
Utah	2%	4%	4%	4%	Cities 4%, towns 8% additional water, light, sewers.
Vermont .....	...	10%	10%	10%	
Virginia	10%	18%	18%	17%	
	Counties less than 300 square miles limited by special acts legislature. Debt limit applies only to assessed value of real property. Magisterial Districts 15%.				
Washington.	5%	5%	5%	...	Additional 5% water, light, sewers.
West Virginia	2½%	2½%	2½%	2½%	2½% additional roads.
Wisconsin	5%	5%	5%	5%	
Wyoming	2%	2%	2%	6%	4% additional for school districts to enlarge buildings, 2% additional for sewers, 2% additional for roads.

Courtesy of Messrs. Bickel, Tiellen & Co., San Francisco.

precisely the way prescribed, within the debt limits specified, and for the purposes allowed. Even a technical violation of the proper procedure may invalidate an issue of municipal bonds and make them void. The argument, however, goes somewhat farther. The position of all officers in charge of municipal affairs is of an especially fiduciary nature. Accordingly, the municipal treasurer might be in a position of being unable legally to pay the invalid obligations of his city, even though they have been sold to innocent purchasers, unaware of the irregularity in issue. To do so would involve a criminal act. Unless the obligations of the municipality have been issued in accordance with all the technicalities involved, therefore, it may become impossible to pay the obligations, however strong the moral grounds.

Thus, if a municipality has no authority to create a given issue of bonds, the bonds cannot be paid unless they are subsequently validated by legislative action. Or, if they have been issued in the face of constitutional prohibitions, then the only way to secure validation is by means of constitutional amendment. Of course, if the only difficulty lies in a technical failure to carry out the procedure of issue, then it may be necessary only to secure ratification or an estoppel. Ratification may already have occurred, if the bonds were sold to purchasers for value who had no notice of the irregularity. The mere fact that the municipality has received payment, has used the proceeds, has levied taxes to pay principal or interest, or both, or has extended or refunded the bonds may be considered sufficient ratification. And, in cases where the courts fail to find ratification, they may hold, where the purchaser for value had no notice of the irregularity, that the municipality is estopped from avoiding payment on the grounds of invalidity. This applies particularly to a situation where the recital of the bond states the existence of certain facts, that certain acts have been performed or conditions complied with, provided the properly authorized officers of the corporation made the statements.

Specialized legal services in purchasing municipals, need of.—In view of the intricacies involved in the whole matter of bond authorization, it is virtually impossible for the individual investor to make a proper investigation of the acts leading up to the issue, the statutes authorizing the issue, or the pro-

cedure involved in the issuance of the bonds. These are all matters for attorneys who specialize in examining and passing on the validity of municipal issues, and it is necessary for the private investor to rely on the opinion of such a firm of attorneys. In fact, it is customary practice, in buying municipals, to insist that a certified copy of a satisfactory legal opinion accompany the bonds. The work of determining the legality of municipal issues is so complex and so specialized that there are not at the present time over 30 or 40 houses in the United States whose opinion is acceptable to the general run of municipal buyers.²

Validation by court decree or short statute of limitations.—There is a growing tendency to overcome the danger of subsequent litigation and invalidation by means of judicial validation or a short statute of limitations. Thus, in Georgia, when a proposition to issue bonds has been adopted at an election, notice is given to a designated state official who starts action against the county or municipality which desires to issue the bonds. An order is obtained directing the issuing unit to show cause why the bonds should not be “confirmed and validated,” and a hearing is provided at which “all questions of law and fact are settled.” If the proceedings are approved, a judg-

² The legal work in connection with examining the validity of municipal bonds is exacting and complex. The following summary of the major steps taken will give the student some idea of the scope of the task:

1. A search of the statutory authority.
2. A determination that the statutory authority is not in conflict with constitutional prohibitions or limitations.
3. A finding that
 - (a) The bonds have been executed by the authorized officers.
 - (b) In the required form.
 - (c) Contain the required recitals.
 - (d) Are payable within the time, at the place, and bear such rate of interest as may be required by constitution or statute.

If registration or approval by any designated officer is required, it must be found that the bonds have been so registered or such approval has been given.
4. The examiner should have assurance on which he may properly rely that the conditions necessary for the legal issuance of the bonds actually have been fulfilled. A certificate of the proper officers is usually sufficient.
5. But, if the law requires a public record as the exclusive evidence of certain facts, purchasers are charged with knowledge of the facts so appearing.
6. The examiner must know as a matter of law whether there is legal authority for the levy or collection of taxes sufficient for payment.

ment is entered for the municipality or county, and this is conclusive evidence of the validity of the issue. In other states it is provided that if, within a relatively short period after the publication of notice of the proposed issue, say, twenty days, no objections are raised against the validity of the issue, then and thereafter no issue may ever be raised.

Doctrine of estoppel; New York and New Jersey.—In New York and New Jersey the legal doctrine of estoppel is used to quiet questions regarding the validity of municipal bonds. Under the New York statutes, "an ordinance creating a funded debt may provide that the bonds therein authorized shall contain a recital that they are issued pursuant to law and an ordinance of the common council, as provided by section 60 of the Second-class Cities Law. Such recital, when so authorized, as aforesaid, shall be conclusive evidence of the regularity of issue of said bonds and of their validity."³

Under the Pierson Bond Law of New Jersey, it is provided that the findings of facts of certain officials shall be final, thus invoking in advance of issue the doctrine of estoppel. This act provides that "the determination of the governing body as to the classification of purposes . . . for which bonds are issued and as to the probable period of the usefulness of any improvement or property, and as to the maturities of the proposed bonds based thereon, shall, upon a majority vote of all the members of such body in office, be conclusive in any action or proceeding involving the validity of said bonds."⁴

Commendable as these attempts are, nevertheless, it is good practice in purchasing municipals to insist on a certified copy of a legal opinion rendered by a competent firm of attorneys. Not only does this offer immediate protection to the purchaser, but a subsequent sale of the bonds is often very difficult without an accompanying opinion. Even this, however, does not protect against forgery and overissuance, that is, against officers of the corporation fraudulently signing and disposing of more bonds than were originally authorized. In the case of corporation bonds, this is provided for by certification, by a trustee under the bond indenture. There are, it is true, some trust companies who offer this service in connection with mu-

³ Cons. Laws, Chapter 53, Section 60.

⁴ P. L., 1917, Chapter 240, Section 4.

municipal bond issues, but they are rarely ever called upon to operate. The investor, therefore, is compelled to rely largely on the carefulness of the issuing house in checking up these matters.

Municipal bond issues, how floated.—Unlike the procedure usually followed in the negotiations between the banker and the corporation, which lead up to a sale of corporation bonds, municipal bonds are generally sold at a public sale to the highest bidder. The former transaction is private and confidential, the latter public and competitive, for most states require that municipalities within their jurisdiction sell their bonds on an open and competitive basis. The customary procedure, therefore, is for the municipality to advertise the sale of its bonds in advance and to receive and open bids for the issue on a specified day. The municipality, however, reserves the right to reject any or all bids, if its officers feel that none is adequate. The following advertisement will illustrate the manner in which such transactions are usually consummated:

\$400,000

CITY OF WATERBURY

CONNECTICUT

4¼ PER CENT WATER BONDS

SEALED PROPOSALS will be received at this office until 7 o'clock P.M., Standard Time, Monday,

July 25th, 1927,

(at which time they will be opened in public at a meeting of the Board of Aldermen of said City) for the purchase of the following described bonds:

\$100,000 4¼ per cent Water bonds of the City of Waterbury, 19th Series; of a denomination of one thousand dollars (\$1,000) each, dated July 15th, 1927, and payable ten thousand dollars (\$10,000) thereof on the fifteenth day of July of each of the years 1957 to 1966 inclusive. Interest payable semiannually January 15th and July 15th.

\$300,000 4¼ per cent Water bonds of the City of Waterbury, 20th Series; of a denomination of one thousand dollars (\$1,000) each, dated July 15th, 1927, and payable ten thousand dollars (\$10,000)

thereof on the fifteenth day of July of each of the years 1928 to 1957 inclusive. Interest payable semiannually January 15th and July 15th.

Principal and interest on the foregoing described bonds to be payable in lawful money of the United States of America at the First National Bank of Boston, Massachusetts.

Said bonds to be issued in coupon form convertible into registered bonds at the option of the purchaser or holder thereof, will be printed under the supervision of and certified as to genuineness by the First National Bank of Boston and their legality approved by Messrs. Storey, Thorndike, Palmer, and Dodge of Boston, whose legal opinion will be furnished the purchaser. All legal papers incident to this issue will be filed with said bank where they may be inspected at any time.

Bonds will be delivered to the purchaser on July 29th, 1927, at the First National Bank of Boston, Massachusetts.

Each proposal shall state the amount of the bid in words and numerals and should be marked "Proposals for Bonds," and addressed to Thomas P. Kelly, City Clerk, Waterbury, Connecticut, and be accompanied by a certified check payable to the order of the City Treasurer of the City of Waterbury for one per centum (1 per cent) of the par value of the bonds bid for, as a guaranty of good faith on the part of the bidder.

No bid for less than par or the face value of the said bonds and the accrued interest thereon can be accepted and the right to reject any and all bids is reserved.

THOMAS P. KELLY,
City Clerk.

It will be noted in reading this advertisement that the municipality makes the offer subject to legal opinion. This is a more desirable method than to have the buyer submit his bid subject to a subsequent examination, which may result in finding some irregularity in the issue. Under such a condition the city might face a vexatious or embarrassing delay in receiving funds from the sale. It will also be noted that any bid to be considered must be accompanied by a deposit as evidence of good faith. Without such a requirement, a house lacking financial responsibility might become the successful bidder and be unable to consummate the transaction. Or, if the successful bid was close to the market value of the bonds, such a bidder might turn his deal over to another house at a profit. In the case of one of the bond sales of the United States government during Cleveland's term in office, a New York bank clerk, having no financial backing at all, entered a bid which was successful and sold his "bid" to a responsible house for a sub-

stantial sum. Bids of this kind, known as "postage stamp bids," were common at one time, but have now been made impossible by the requirement that a certified check accompany each bid.

Different types of municipalities; economic and legal status.—We may next consider briefly the different types of municipalities which customarily issue bonds. Generally speaking, the term "municipality" is used to include all municipal or quasi-municipal bodies, including school and special taxing districts. Counties, although they may be called municipal corporations, as in New York,⁵ are more accurately major political subdivisions of the state, that is, legal organizations vested with some of the customary municipal powers, but not true municipalities. There is no legal difference, it is true, between the bonds of a county and those of a city; but there is the practical difference that counties may issue bonds for relatively only a few purposes. Also the total amount of county bonds outstanding is generally small in relation to the assessed valuation of the taxable property in the county.

The economic status of county bonds should require them to be rated somewhat higher than bonds of the included municipalities. In most states the county, after determining the amount of annual budget, apportions this over the various municipalities and other taxing units on the basis of assessed property therein. The county levy thus constitutes a definite claim to the revenues raised by the local taxing unit. Cities, on the other hand, have more or less complete self-governing powers by virtue of the typical charters under which they operate. They are, likewise, expected to have full and complete self-governing powers, which include the power of taxation as well as the incidental power of borrowing in anticipation of revenues. Thus, city bonds, as a class, probably command a slightly better price than county bonds, even though theoretically county bonds ought to rate ahead of those of cities and towns. The latter type of municipality enjoys full taxing powers, is generally run on a more businesslike basis than are counties, and represents a more highly organized unit.

The relationship between county and city, however, leads

⁵ Cons. Laws, Chapter 24.

to the necessity for a further analysis of debt and property values than is ordinarily given in the case of county bonds. The customary method for setting up a county debt statement is to state the assessed valuation of property within the county, its population, and its gross debt. The same property that provides security for the county debt also provides for the payment of all the municipal and special district debts within the county, as well as for its proper share of the state debt. Accordingly, it is necessary to estimate the total debt within the county by finding the total net debt of the municipalities within the county and adding this total to the net county debt. The state debt may then be apportioned by finding the proportion of total state assessed valuation located within the county and applying this percentage of the state's net debt to the county debt. The result so determined, added to the previous total, will give the actual debt supported by the county's property. The following example will show how these corrections may be made in a given case:

ANALYSIS OF HUDSON COUNTY DEBT, 1926

Net Debt—Hudson County Proper.....	\$24,879,171
Net Debt of Cities Located in Hudson County.....	37,515,617
Net Debt Covering County Area.....	<u>\$62,394,788</u>

Proportionate Share of State Debt:

County Assessed Val. 1,296,944,101	$\times 67,116,000$	15,990,000
State Assessed Val. 5,443,448,817		<u>15,990,000</u>
Total Net Debt.....		\$78,384,788
Assessed Valuation		\$1,296,944,101
Ratio Debt to Assessed Valuation.....		6.04%
Population		629,154 (1920)
Per Capita Debt.....		\$124.57

Special municipal districts.—Below the city will be found minor political units, which may have all or part of the powers granted to cities, depending on their size and the state in which they are situated. Towns, villages, or boroughs are usually smaller political units than the city, and are endowed with less complete powers, although, so far as borrowing and taxing powers are concerned, they are in essentially the same situation as the city.⁶ From the investor's standpoint, therefore,

⁶ The political unit following the city is given different nomenclature in different states. In most New England states it is called the town, although the

the difference is mainly economic. The village, the borough, or the town suggests a small population, a rural community, and lack of diversified industry.

In addition to the county, city, or town, the state may create other districts and allocate to these certain powers not delegated to the city or the town. These districts, furthermore, may be superimposed on a city or a town already set up. Such districts may be for the purpose of operating schools, in which case they are called school districts; or the essential purpose may be to build and operate roads, drainage projects, irrigation, or to serve any other ends which may make the creation of such a district desirable.⁷ The legal characteristics of these districts may be described as follows:

The school district or road district is usually invested by general enactments operating throughout the state with a corporate charter, the better to perform within and for the locality its special function, which is indicated by its name. It is but an instrumentality of the state and the state incorporates it that it may the more effectually discharge its appointed duty. . . . Considered with respect to the limited number of their corporate powers, the bodies above named rank low down in the scale or grade of corporate existence, and, hence, have frequently been called quasi corporations. This designation distinguishes them, on the one hand, from private corporations aggregate, and, on the other, from municipal corporations proper, such as cities or towns acting under charters, or incorporating statutes, and which are invested with more powers and endowed with special functions relating to the particular or local interests of the municipality, and to this end are granted a larger measure of corporate life.⁸

term "borough" is used in Connecticut to designate the wider area known as the town in other New England states; in New York the term "village," and in Louisiana, the term "parish," is used.

⁷ The Chicago Sanitary district was incorporated by the state of Illinois in 1899 and comprised some 386 square miles of territory, including the city of Chicago. This district was incorporated solely for the purpose of enabling a section of the state to construct and finance the disposal of sewage. It has full taxing powers and may borrow money to acquire the necessary plant and other assets to perform its work. It has no other functions. The Miami Conservancy District of Ohio was incorporated for the sole purpose of enabling the people within the drainage area of the Miami River to finance the work necessary to protect themselves against floods and washouts. Other special districts of this type are the Moffat Tunnel District, including Denver, Colorado, and the Port of New York Authority, including a part each of New York and New Jersey.

⁸ Dillon, J. F., "Law of Municipal Corporations," p. 67, 1911, Little, Brown & Co., Boston.

Effect of superimposed districts on true debt of localities.

—The obligations of such corporations are secured in essentially the same way as those of cities and towns, that is, by the taxing power applied to the property within the district. The presence of such districts, however, complicates somewhat the problem of analyzing municipal bonds, for it means that a further set of obligations is now imposed on the same property. That is, where the school district is practically coterminous with a city, as it often is, the aggregate debt of the city includes not only the city debt proper but the school district debt as well. In selling the bonds of the school district, it is customary for the bond house to show on the bond circular only the net school debt, assessed valuation, and population for the district, without reference to the city obligations, to say nothing of the municipality's share of the county debt. In reality, the problem of determining the exact net debt of any given municipal district at a given moment is a rather complex one. Further attention is devoted to this matter in subsequent parts of this chapter (see page 682).

Special assessment bonds.—The obligations of these quasi-municipal corporations are not to be confused with special assessment bonds. The former represent the full obligations of a specially created district and are usually payable from unlimited taxes on the property located in such districts. Special assessment bonds, however, are not general obligations of the issuing unit unless so specified, but are payable from assessments against the specific property benefited by the expenditure of the borrowed funds. Thus, in the case of quasi-municipal bonds, that is, school, road, irrigation, or levee districts, the problem of financial analysis centers in part on the relation of debt to the assessed value of property within the area in much the same way that a similar study is made in analyzing the bonds of ordinary municipalities. In considering special assessment bonds, however, it must be recognized that only a part of the entire property of the issuing municipality may be assessed. Such bonds, therefore, should be purchased only after the investor has studied the character of the *district* responsible for payment, the stability of values within its limits, and its ability to meet assessments necessary to pay principal and interest. This is necessary, where the issuing municipality fails to pledge its full faith and credit for the

ultimate payment in case revenues from special assessments are inadequate.⁹

The distinction between special assessment and district bonds should not be interpreted as indicating that the former are less desirable, as a class, than the latter. As a matter of fact, quite as many recent defaults in the municipal field may be found among certain irrigation and road bonds in the west and the southwest as among special assessment bonds. The principal reason for these defaults has been the lack of adequate property values to support the charges incurred through borrowing operations.¹⁰ It may happen that the incorporated district comprises farm lands of doubtful value. The issuance of bonds is undertaken to provide funds for improvements that are expected to raise values. If the project to be financed is ill-advised, or improperly executed, the added values fail to materialize and the district becomes bankrupt. Where the debt service requires a tax so high that it does not pay the landowner to meet the assessments, a sheriff's sale for taxes is of little assistance to the bondholders, for it is more than likely that the price realized for the land will fail to cover taxes, thus requiring the bondholders to bid in order to protect their equity. This is especially true, where the district lacks fertility or an adequate rainfall. The purchase of irrigation bonds, of course, requires an intimate knowledge of the project, its engineering problem, and the ultimate increase in values that may reasonably be expected to materialize.

The mere fact that a bond is designated as an assessment bond is by no means evidence that it is payable only from assessments against the property benefited. The ill favor in which such bonds are now held has led municipalities to issue bonds to pay for local improvements, and yet to pledge their

⁹ The student will do well to study the case of Superior, Wisconsin, which defaulted on certain special assessment bonds in 1904. See *Commercial and Financial Chronicle*, Vol. 79, p. 2107.

¹⁰ For specific examples, the reader is referred to the following:

Denver St. Vrain Municipal Irrigation District and Denver-Greeley Valley Municipal Irrigation District, Colorado (see *Chronicle*, Vol. 92, p. 476).

San Arroya Irrigation District, Colorado (*Chronicle*, "State and City Section," May 30, 1914, p. 145).

See also List of Local Improvement District Bonds, State of Washington, in default as reported in various issues of Investment Bankers' Association *Bulletins*, 1926 and 1927.

unlimited taxing power for the payment thereof. In such cases, however, the city undertakes to assess special taxes against the property benefited in an amount sufficient to pay the necessary interest and principal. Failure on the part of the city to collect adequate taxes does not relieve it from the necessity of meeting the payments on the bonds. This is true, for example, of special assessment bonds issued in New York and New Jersey.

Purposes for which municipalities may borrow.—The purposes for which municipalities may borrow are generally stated either in the state constitution or in the statutes which set forth the borrowing powers of the state's political subdivisions. Frequently, municipalities are definitely prevented from using their credit for certain purposes, particularly for the purpose of assisting private enterprises. For the purposes of our present discussion municipal borrowing may be divided into temporary and funded or long term debt. Temporary borrowing operations are the result of the peculiar characteristics of municipal revenues. Municipalities, of course, derive their revenues largely from taxation. Taxes, however, are collected as a rule only once a year, or at most twice a year, while the municipality is required to provide for almost continuous expenditures. To meet this situation, frequently municipalities are obliged to borrow for current expenses. This type of financing is sound in the case of municipalities and governments, for it avoids the collection of taxes in advance. Furthermore, it is often impossible to predict exactly what either revenues or expenses will be, with the result that there are inevitable maladjustments between income and expense requiring temporary financing. Within limits, therefore, all full municipalities and other administrative districts are given power to resort to temporary borrowing in anticipation of taxes.

Contrasted with this temporary or short term financing are the loans of municipalities floated for the purpose of erecting public buildings, carrying out public improvements, or otherwise performing the logical functions of local government. Borrowing may also be undertaken in order to acquire and operate industries vitally necessary to the public welfare. Ownership and operation of water works has long been recognized as a proper function for municipalities. More recently municipal operation of electric lighting plants, gas plants, and

street railways has been undertaken. If the municipality is successful in the operation of these undertakings, then the revenues therefrom will offset any additional debt charges incurred in the acquisition of the properties. Such municipal debt is regarded as self-supporting; that is, revenues from operation cover charges and additional taxation is not required to meet the payment of interest thereon. A financial analysis of the state of a municipality's credit requires that self-supporting debt be differently treated than debt which must be met out of taxes. While it would be difficult to enumerate all the specific purposes for which municipalities borrow, the following list will suggest some of the more common:

Erection of Public Buildings

City Hall

Libraries

Protection

Police Buildings

Fire Buildings and Equipment

Flood Protection

Public Improvements

Streets and Paving

Bridges

Sidewalks

Parks

Sanitation

Incinerators

Garbage Disposal

Sewage Systems

Education

Schools

Municipal Utilities

Water

Gas

Electricity

Traction

Municipal operation of public utilities, desirability of.—Whether it is good practice for a municipality to extend its

activities to include the operation of public utilities is debatable. The operation of water systems is so simple and standardized and so necessary to a community that little question is ever raised over municipal control of such enterprises. When it comes to the operation of electric light and power, gas, or traction systems, the question is more difficult to answer. The opportunity for mismanagement, political corruption, and extravagance is open. It is also possible for those in power to conceal operating losses for many years through failure to charge adequate depreciation. In other words, it is possible for a city to embark on an extended program of municipal operation of public utilities which requires heavy borrowing. Such loans are enthusiastically authorized, on the assumption that they will be self-supporting. Where municipal operation proves unsuccessful and charges fail to be earned, the debt becomes a charge for the taxpayer. Detroit, Michigan, and Seattle, Washington, have probably gone farther in the matter of municipal operation of public utilities than any of the other larger cities. Thus, Detroit had outstanding in 1925 bonds to the amount of \$23,551,000, which represented the cost of acquiring the Detroit United Railway System in 1922.¹¹ These bonds, issued by the City of Detroit, are direct and unlimited obligations, although, when they were issued, it was expected that revenues from municipal operation would be sufficient to meet operating expenses and interest charges. Seattle, in the same year, had outstanding \$13,704,000 street railway bonds and \$27,110,000 light and power bonds. These bonds, however, are payable, principal and interest, from the gross revenues of the utility properties which they cover and are not supported by the general taxing power of the city. In this way, the city avoids the liability of being required to meet charges in case of failure, although it is possible that she might feel obliged to assume responsibility in order to protect her credit.¹²

Maturities of municipal bonds.—The purpose for which municipal bonds are issued should govern, to some extent, their

¹¹ The municipal debt of Detroit, exclusive of water debt, was recently \$185,537,376.

¹² April 7, 1925, the voters of Chicago voted against a proposal to authorize the city to acquire the surface lines of that city at a cost of over \$100,000,000.

maturities. It is obviously poor financing to issue twenty-five or thirty year bonds in order to provide funds to build a road whose maximum life is but five years. The inevitable result of this policy of loading up the city with long term debts, incurred for dissipated assets, would be financial trouble. The theory of municipal borrowing is based largely on the idea that improvements will add to the general value of taxable properties, or that the improvements obtained from the borrowed funds will be of benefit in subsequent years. On this basis, it is proper that the cost of acquiring these improvements should be deferred until the added values in taxable properties have materialized, or that their cost should be passed on in part to subsequent generations through borrowing operations which defer payments. That payments should be deferred beyond the life of the improvements is, however, entirely illogical.

Recognizing the dangers that may result from lack of control over bond maturities, some states prescribe the length of time that municipal bonds may run. Massachusetts probably has the most complete law in this respect. The statutory provisions of this state limit municipal borrowing by restricting the purposes for which debts may be incurred as well as their maturities. Thus, cities and towns may incur debts within specified limits, for the following purposes and payable within the time specified:

1. For the construction of sewers for sanitary and surface drainage purposes and for sewage disposal, thirty years.
2. For acquiring land for public parks under the provisions of Chapter 45 of the General Laws, thirty years.
3. For acquiring land for, and the construction of, schoolhouses or buildings to be used for any municipal or departmental purpose, including the cost of original equipment and furnishing, twenty years.
4. For the construction of additions to schoolhouses or buildings to be used for any municipal purpose, including the cost of original equipment and furnishings, where such additions increase the floor space of said buildings to which such additions are made, twenty years.
5. For the construction of bridges of stone or concrete, or of iron superstructure, twenty years.
6. For the original construction of streets or highways or the extension or widening of streets or highways, including land damages and

the cost of pavement and sidewalks laid at the time of said construction, ten years.

7. For the construction of stone, block, brick, or other permanent pavement of similar lasting character, ten years.

8. For macadam pavement or other road material under specifications approved by the Division of Highways, five years.

9. For the construction of walls or dikes for the protection of highways or property, ten years.

10. For the purchase of land for cemetery purposes, ten years.

11. For such part of the cost of additional departmental equipment as is in excess of 25 cents per \$1,000 of the preceding year's valuation, five years.

12. For the construction of sidewalks of brick, stone, concrete, or other material of similar lasting character, five years.

13. For connecting dwellings or other buildings with public sewers, when a portion of the cost is to be assessed on the abutting property owners, five years.

14. For the abatement of nuisances in order to conserve the public health, five years.

15. For extreme emergency appropriations involving the health or safety of the people or their property, five years.

16. For the payment of final judgments rendered after the fixing of the tax rate for the current year, one year.

17. For such other emergency appropriations as shall be approved by a board composed of the Attorney-General, the State Treasurer and the Director, one year.

Other states set arbitrary limits on the time within which local bond issues must mature. In New Hampshire and Vermont all local bond issues must mature within twenty years. The limit in Pennsylvania, exclusive of Philadelphia, is thirty years; in West Virginia, thirty-four years; in Georgia, thirty years; in Illinois, Wisconsin, and Missouri, with exceptions, twenty years; in Oklahoma, twenty-five years. In Colorado the limit for county bonds is ten years, and for city and town bonds not less than ten, nor more than fifteen, years.

There is a growing tendency for states to require local bond issues to mature serially. Formerly, the accumulation of sinking funds from annual revenues was required in order to provide sufficient cash to meet an issue of bonds when it became due. There is, however, too much opportunity for mismanagement in the operation of these funds to make this a

desirable method of meeting the situation. Massachusetts, North Carolina, New Jersey, and Ohio, among other states, require the serial method of payment of local bond issues. In many other states municipalities have adopted this method in the absence of specific requirements.

Financial analysis of municipal bonds.—Up to this point discussion has centered on the general aspects of municipal financing rather than on the specific factors that make the bonds of various municipalities differ in safety and desirability. In a broad way, it may be said that those economic factors which contribute to the wealth and growth of a local community contribute also to the financial strength of its bonds. The amount of debt outstanding, in relation to resources and population, is also important. Its location in respect to natural phenomena, such as floods, earthquakes, and tornadoes, must be considered. Finally, the age of the municipality, its past debt history, and the character of its population are all matters that affect the credit of a given community.

Local industries.—The presence of diversified industries within the territorial limits of a local district has the same value to the district as was noted in our discussion of state bonds. Diversified and growing industries, of course, mean a permanent and growing income for the community. Another factor of importance is the location of the municipality in respect to transportation. Cities like St. Louis, Missouri, Dallas, Texas, Kansas City, Missouri, Omaha, Nebraska, and Des Moines, Iowa, are railroad centers, and, hence, act as distributing points for the surrounding country. Even though there were no important industries in these cities, there would be an element of stability arising from their location as a junction point for several important railroads. As contrasted with cities that enjoy varied industries or strategic locations, there are one-industry communities, or communities whose principal industry is mining. Akron, Ohio, for instance, is largely devoted to the production of rubber goods. Fall River, Massachusetts, and Woonsocket, Rhode Island, are essentially textile communities. Tulsa, Oklahoma, owes its wealth largely to the oil fields in its immediate vicinity. The recent prolonged and severe depression in the cotton industry has seriously affected property values in Woonsocket and Fall River. A

decline in Oklahoma oil production might conceivably result in a serious decline in property values around Tulsa. Important information regarding the amount of capital invested, the character of the industries, and the value of the products of the leading industries in more important cities is available from the United States census volume on "Manufactures."

Where a local district is situated close to a large city and serves primarily as a residential suburb, the presence of industry is not desired. Newton and Brookline serve in this way for Boston. There are a large number of such communities located in the vicinity of New York. In fact, there are towns as far as thirty miles from New York that serve principally as residential areas for the metropolis.

Ratio of net debt to assessed valuation.—Whereas a general survey will indicate the permanency that may be expected in relation to values in a given case, it fails to give specific information in respect to the municipality's real ability promptly to meet the principal and the interest on its debts. A more detailed economic analysis is here required. The most obvious indication of a municipality's ability to pay lies in the ratio of net debt to the assessed value of the property within its area. Such a ratio also makes it possible to compare the status of different municipalities by reducing net debt to a common denominator.

Net debt, how to ascertain.—In making the actual computations necessary to arrive at this ratio, however, it is necessary to define our terms. For instance, What is meant by "net debt"? One would obviously be in error were he to use as a basis for computations the actual total debt of the municipality, for it often happens that sinking funds are held in the city's treasury against outstanding bonds. It is, therefore, perfectly proper that these should be deducted from total debt before arriving at net debt. But let us consider still another situation. Suppose that city *A* operates its own water system, which was acquired at a cost of \$2,000,000, the entire amount of which was secured by a bond issue. Revenues from this system, however, adequately cover charges. These bonds, accordingly, do not result in a charge on the taxpayer. City *B*, on the other hand, does not own its water system, rather is it controlled by private interests. In order to put these two

cities on a comparable basis, therefore, it is necessary to eliminate water debt from the former in arriving at "net debt." In fact, it is usually considered good practice to eliminate all self-supporting debt in arriving at the net figure.

Treatment of overlapping areas.—As contrasted with these deductions, however, one must consider the entire question of overlapping districts. We saw that in some states it is customary to create special school districts more or less coterminous with municipalities. These school districts borrow for the purpose of erecting and maintaining schools, thereby relieving the municipality from this burden. Where the school district is established, however, the same property is assessed to meet its debt as that of the municipalities. As already explained, it is proper to add special district debts, or a proper portion of them, to the debt of the municipality. The same applies to county debt. This should be properly apportioned over municipalities within the county, as should the state debt.¹³

Proper ratios of debt to assessed valuation.—Assuming that the proper methods for determining the net debt of a municipality have been established, the question arises: What should the ratio of debt to the actual or adjusted assessed value of property be? ¹⁴ This is a question that cannot be answered precisely. For one thing the size of the municipality will make some difference. Undoubtedly the larger the city, the more diversified its industries are likely to be, and the more likely it is that values will be stable. Consequently, in the case of large cities, a higher ratio of debt to assessed value may be accepted as conservative than in the case of very small communities, where main sources of income lie in one, or at most several, local industries. The Bureau of the Census divides cities having a population over 30,000 into five groups and has prepared for each group the ratio of total debt to total assessed valuation. The following table gives these data for the five groups for the year 1925:

¹³ See p. 682, for the practical illustration of this procedure.

¹⁴ Note that we say "actual or adjusted assessed value." Where a city assesses property at less than its real value, then the assessed value should be revised to 100 per cent. For a further explanation see p. 643.

ASSESSED VALUES AND DEBT STATISTICS FOR CITIES OVER 30,000 *

(Population, 1925)

<i>Groups of Cities with Specified Population</i>	<i>Assessed Valuation Property Subject to General Property Tax</i>	<i>Net Debt at Close of Year</i>	<i>Ratio of Net Debt to Assessed Valuation</i>
Group I. 500,000 population and over.....	\$32,121,141,296	\$2,636,859,038	8.20%
Group II. 300,000 to 500,000 population	7,111,631,322	514,956,850	7.23
Group III. 100,000 to 300,000 population	12,903,697,949	862,217,454	6.68
Group IV. 50,000 to 100,000 population	7,508,363,318	426,474,542	5.67
Group V. 30,000 to 50,000 population	3,939,690,978	219,121,350	5.57

* "Financial Statistics of Cities," Bureau of the Census, Dept. of Commerce, 1925, pp. 414, 454.

There is a gradual reduction in the ratio of debt to assessed value from the large to the small municipality. The logic of this tendency has already been discussed. The average ratios in the preceding table also give some idea as to what ratios may be considered as conservative. If all overlapping debt has been allocated to the municipality under consideration, one is probably justified in saying that a 10 to 11 per cent ratio of net debt to the true assessed value figure would be conservative for a city with a 500,000 population or over. It may be argued that a 10 or 11 per cent ratio is so low that no question could ever be raised concerning the security behind the bonds, and that a ratio of, say, 20 per cent would not indicate too high a debt. Such a ratio in fact would mean only that the municipal debt equaled one fifth of the value of the taxable property within the district, truly a small per cent of total value. Yet it is the effect of the debt on taxes and industry that must be considered. As net debt increases over 10 per cent of taxable values, the tax rate must be correspondingly raised to meet debt service. This discourages industry. Furthermore, the reluctance of a municipality to levy onerous taxes is generally the impelling motive that has in the past led to repudiation with or without reliance on technical grounds of invalidity or illegality of issue. Where debts are within conservative limits, therefore, the occasion for default is lacking.

In the case of the smaller municipality, it is justifiable to take a somewhat smaller ratio as conservative. Just where the real distinction between a large and a small municipality should be made is more or less a matter of judgment. One may logically make only a small distinction between cities of 100,000 population, and up. But when one considers municipalities with a population of 50,000 or under, much greater attention should be paid to the ratio of debt to assessed valuation. Thus, in establishing theoretically conservative ratios, one would probably reduce the limits only slightly for cities in Groups II, III, and IV; but in respect to cities in Group V, and particularly in respect to cities and towns with a population under 30,000, a decided lowering of the limits is desirable. A 6 per cent ratio may be set for cities coming in Class V, and, for smaller localities, particularly where population is under 10,000, the limits should probably be lowered gradually to 4 or 5 per cent.

In establishing theoretical limits of this nature, it is necessary to explain that they are only rough guides and that special factors are often present to alter the situation. Compare, for example, a town with a population of 3,000 located in a mining district, with a town of equal population situated close to a large city. Undoubtedly, one should insist on a much lower ratio in the first case than in the second, to account for the greater stability in values found in the latter. A study of recent defaults in municipal bonds will show that they have occurred almost entirely among special assessment issues or among those of small localities lacking diversification. On the other hand, with the rough limits which have been set up as a guide, the investor is in a position to compare the relative debt of a given municipality with a wide range of other factors, including type and diversification of industry, character of the population, age of the community, its location, its nearness to other municipalities, its legal control over borrowing operations, and its liability to widespread damage from natural phenomena, in an effort to test the reasonableness of its debt ratio.

Per capita debt.—Another test which supplements to some extent the ratio of net debt to assessed values involves a determination of the net debt per capita of the municipality.

The possible errors that arise in the process of assessment, and the avowed policy of some states in allowing assessments at rates substantially below the actual value of the property, make it advisable to find a means of checking the ratio of debt to assessed value. This is made possible by ascertaining the "net per capita debt" of the district. Despite the fact that the actual per capita wealth of communities varies rather widely, per capita debt figures do indicate to some extent the ability of a municipality to discharge its obligations. After allowing for the rather wide differences that exist in the per capita wealth of communities, a per capita debt of \$350 for a municipality of, say, 100,000 population, would appear high. On the other hand, a per capita debt of \$50 would appear very conservative. The question arises, What figures may be adopted as normal? Again, one comes to the inevitable conclusion that the larger the city or the municipality the larger the per capita debt may be without placing an undue financial burden on the community. The reasons for this conclusion have already been discussed in part. An additional factor must be explained, however, and that is the fact that wealth is concentrated in large cities, thus resulting in larger wealth per capita in such localities. Theoretically, this factor does not enter the situation in discussing the ratio of debt to assessed valuation, for the variable unit, wealth, has been used as the denominator. As a matter of fact, however, much of the wealth that is concentrated in larger communities is intangible, that is, it is in the form of stocks, bonds, and other evidences of wealth that are not easily assessed. Hence one may even conclude that actual wealth increases more rapidly than assessed values as the size of the municipality increases.

Proper ratios of debt to population.—The clue to the proper limits for per capita debt is likewise found in the census compilations. Based on data for 1925 the following averages appear for the various groups of municipalities established by the census:

PER CAPITA ASSESSED VALUATION AND DEBT STATISTICS

(Cities over 30,000 Population, 1925)*

<i>Groups of Cities with Specified Population</i>	<i>Total</i>	<i>PER CAPITA OF GROSS DEBT</i>			<i>PER CAPITA ASSESSMENT SUBJECT TO THE</i>	
		<i>For General Departments and Municipal Service Enterprises</i>	<i>For Public Service and Investment</i>	<i>Per Capita of Net Debt</i>	<i>GENERAL PROPERTY TAX</i>	
					<i>Assessed Valuation</i>	<i>Estimated True Value</i>
500,000 and over...	\$225.14	\$197.29	\$27.85	\$147.86	\$1,801.19	\$2,201.58
300,000 and less than 500,000.....	149.01	106.44	42.57	116.61	1,610.47	1,942.21
100,000 and less than 300,000.....	120.95	90.16	30.79	91.77	1,373.43	1,769.20
50,000 and less than 100,000.....	95.45	76.67	18.77	74.72	1,315.53	1,728.43
Over 30,000 and less than 50,000.....	87.07	71.21	15.86	64.34	1,156.84	1,602.89

* "Financial Statistics of Cities," 1925, pp. 414, 455.

Here is conclusive evidence that per capita wealth decreases with the size of the municipality. Furthermore, the per capita debt for groups varies directly as the size of the municipalities within the group vary, indicating that it is current practice for the smaller municipalities to keep down their per capita debt as compared to the larger ones. In view of this situation, it is entirely logical that any theoretical limits should take into account this tendency. Again, at the risk of appearing dogmatic, the following limits are suggested as conservative. These, it will be understood, apply under our own methods of computation, which provide for determining the aggregate debt of the community after apportioning all overlapping district debts, and after deduction of self-supporting debts and sinking fund.¹⁵

SUGGESTED LIMITS TO PER CAPITA DEBT

<i>Group</i>	<i>Limit Suggested as Conservative for per Capita Debt</i>
I	\$150
II	125
III	100
IV	80
V	75
Population less than 30,000.....	40 to 75

Municipal revenues and expenses, analysis of.—Further information relative to the manner in which municipal finances are administered is available through the Census Bureau,

¹⁵ The census data previously given are based on the debts of the municipalities proper, with no adjustment for overlapping areas.

which issues annually for all the states and many of the more important cities analyses of revenues, expenditures, and debt. The following analysis for the city of Stamford, Connecticut, for the year ended December 31, 1925, indicates the manner in which this information is provided. From these reports it is possible to determine whether a municipality is extravagant in its current operating expenditures, the extent to which it has been required to balance revenues with expenditures by borrowing, and the increase in debt from year to year.

DEPARTMENT OF COMMERCE

WASHINGTON

FINANCIAL STATISTICS OF THE CITY GOVERNMENT OF STAMFORD, CONN., FOR 1925

Washington, D. C., September 16, 1926.—The Department of Commerce announces a summary of the financial statistics of the city corporation of Stamford, Conn., for the fiscal year ending Dec. 15, 1925. It should be noted that, in order to put the city of Stamford on a basis comparable with those cities in which the towns are a part of the city corporation, the figures here given include 81.7 per cent of the transactions of the town of Stamford for the fiscal year closing Sept. 30, 1925, the percentage being based on the ratio of the assessed valuation of the city to that of the entire town.

Expenditures

The payments for maintenance and operation of the general departments of Stamford, Conn., for the fiscal year ending Dec. 15, 1925, amounted to \$1,690,523, or \$41.55 per capita. In 1924 the comparative per capita for maintenance and operation of general departments was \$37.69, and for 1917, \$22.34. The interest on debt amounted to \$159,997; and outlays for permanent improvements, \$579,918. The total payments, therefore, for expenses of general departments, interest, and outlays, including the town, were \$2,430,438. The total payments included for the town amounted to \$1,317,531. Of this amount, \$915,880 represents the expenses for maintenance; \$86,775, interest on debt; and \$314,876, outlays. The totals include all payments for the year, whether made from current revenues or from the proceeds of bond issues.

Revenues

The total revenue receipts of Stamford for 1925, including the town, were \$2,311,228, or \$56.80 per capita. This was \$460,708 more than the total payments of the year, exclusive of the payments for permanent

improvements, but \$119,210 less than the total payments including those for permanent improvements. These payments in excess of revenue receipts were met from the proceeds of debt obligations. The revenue receipts included for the town amounted to \$1,087,604. Property taxes represented 91.4 per cent of the total revenue for 1925, 91.3 per cent for 1924, and 85.3 per cent for 1917. The increase in the amount of property taxes collected was 112.8 per cent from 1917 to 1924, and 15.8 per cent from 1924 to 1925. The per capita property taxes were \$51.93 in 1925, \$46.00 in 1924, and \$23.04 in 1917.

Indebtedness

The net indebtedness (funded or fixed debt less sinking fund assets) of Stamford on Dec. 15, 1925, was \$3,856,738, or \$94.79 per capita. Of the total net indebtedness \$2,951,099 was for the town. In 1924 the per capita debt was \$60.31, and in 1917, \$43.60.

The increase in net debt reported for 1925 was due to a bond issue for school purposes.

Assessed Valuations and Tax Levies

For 1925 the assessed valuation of property in Stamford subject to ad valorem taxes for city corporation was \$60,547,621. The levy for all purposes for 1925 was \$2,123,735, of which \$1,151,339, or 54.2 per cent, was levied for the city corporation; \$899,738, or 42.4 per cent, for the town; \$50,255, or 2.4 per cent, for the state; and \$22,403, or 1.1 per cent, for the county. The per capita tax levy for the city, town, state, and county was \$52.19.

Municipal tax rate.—Another test of the financial operations of a municipality is found in the tax rate applied to the assessed value of property within the area. A total tax rate between \$20 and \$35 per thousand of corrected assessed values may be considered as reasonable. A higher rate should require an explanation. It will be found that a rate of \$30 or over places a burden on the property owner that reacts unfavorably on the community. Not only is industry directly burdened by the high tax rate, but indirectly through the higher rents that must be charged.

Municipal analysis card explained.—Up to this point the more important financial factors that should be analyzed in studying the obligations of municipalities have been considered. In order to provide a convenient method for making the necessary computations and presenting the preceding data on a comparable basis, the author has devised a "municipal analysis" card, along the following lines:

Fig. 28.

MUNICIPAL ANALYSIS CARD

Issuing Corporation: New London. County: New London. State: Connecticut. Incorporated: 1646-1784. Character of Corporation: Municipality.		Tax Limits: None. Character of Population: White. Subject to Natural Phenomena: No.		Past Debt History: Clear. General Character of Industries: Varied manufacturing; capital invested, 1919, \$9,719,000; value of products, \$10,274,000.			
DIRECT OBLIGATIONS (including Special Assessment Bonds)		1923	1924	1925	1926	19—	19—
1. School Bonds and College		\$795,000	\$734,000	\$655,000	\$649,000		
2. Water Bonds		901,000	876,000	1,159,000	1,095,000		
3. Street, Road, or Paving Bonds							
4. Gas and Electric Light Bonds							
5. Building and Improvement Bonds and Park		415,000	480,000	710,000	680,000		
6. Miscellaneous: Sewer		35,000	35,000	35,000	106,000		
7. Miscellaneous: Funding		258,000	250,000	240,000	204,000		
8. Miscellaneous: Floating		559,000	650,000	800,000	700,000		
9. Miscellaneous							
10. Miscellaneous							
11. Miscellaneous							
12. Miscellaneous							
13. Miscellaneous							
14. TOTAL DIRECT OBLIGATIONS		2,954,000	3,025,000	3,599,000	3,434,000		
15. District Debt Apportioned to City							
16. County Debt							
17. State Debt		83,500	57,000	29,600			
18. Special Debt							
19.							
20.							
21. TOTAL GROSS MUNICIPAL DEBT		3,037,500	3,082,000	3,628,600	3,434,000		
22. LESS REDUCTIONS WATER DEBT AND SINKING FUND		964,598	914,800	1,185,809	1,127,800		
23. NET MUNICIPAL DEBT		2,072,902	2,167,200	2,442,791	2,306,200		
24. Assessed Valuation		33,693,139	39,850,569	46,312,185	41,310,556		
25. Rate of Assessment		90%	90%	90%	90%		
26. Ratio—Net Debt to Assessed Valuation, Uncorrected		6.1%	5.43%	5.27%	5.58%		
27. Population		25,688	25,688	25,688	30,000		
28. Net Debt per Capita		80.70	84.36	95.00	76.89		
29. Tax Rate (per \$1000)		27.50	26.50	26.50	28.50		
30. General Municipal Rating		100%	100%	100%	100%		
31. Rating on							
32. Rating on							
33. Rating on							
34. Average Yield of Bonds							

The first section of the card is devoted to matters of general interest, such as the county and the state in which the municipality is located, its date of incorporation, the type of corporation, whether a city, town, borough, or school district, the character of its population, whether predominantly white, or part white and part negro, its past debt history, the debt limits established for the municipality, whether subject to natural phenomena or not, and the nature of essential industries within the district. Thus is given a general picture of the municipality. The second section provides for recording the actual debt of the corporation according to the purposes for which issued. The headings here require no elaborate discussion. Additional space is left for listing debt which cannot be classified under the printed captions, such as temporary certificates, assessment debt, etc. The aggregate of these debts will constitute the total direct obligations of the municipality. To this direct debt must be added the city's share of any special district debt, of the county debt, and also of the state debt. The most practical basis for apportioning this overlapping debt is to ascertain: (a) the assessed valuation of city property, (b) the assessed valuation of property given for each overlapping district, and (c) the net debt of each overlapping district, county, and state. Assuming, now, that we are dealing with districts that include the entire municipality as well as additional area, we next find the proportion of (b) the assessed property values in the larger area that is found in (a) the city or town itself. This ratio (which would be $\frac{a}{b}$) is applied to (c) the net debt of the larger area, and the result ($c \times \frac{a}{b}$) is considered the debt properly apportioned to the city proper for each overlapping district. Where the special district constitutes an area coterminous with the municipality, or entirely within the boundaries of the municipality its entire net debt should be added to the total direct obligations thereof. On the other hand, where the area of the special district covers only a part of the municipality and extends beyond it, a difficult situation is created, in that it is often impossible to ascertain exactly what portion of the district actually belongs to the municipality. Situations of the latter nature, however, are rare. Generally the municipality lies

entirely within the area of a larger district, except in the case of school or sanitary districts, which are sometimes coterminous with the municipality or found entirely within the latter's boundaries.

The total of direct obligations plus the apportioned district debt constitutes the total gross debt of the municipality. From this must be deducted sinking funds and self-supporting debt for reasons already explained. The net debt so obtained will indicate rather more accurately than the "net city debt proper" the actual extent to which the property within a given area has been "pledged," so to speak, for the payment of debt service. It is this figure, therefore, that we shall refer to as the municipality's net debt.

The final section of the card provides for recording the assessed valuation of property subject to tax, the basis of assessment, the ratio of debt to assessed valuation, population, per capita debt, and the tax rate. Subsequent sections are left for entering not only a general municipal rating but also a rating on special issues. It is possible to work out a system whereby municipalities may be rated for investment purposes. This is done by considering a perfect situation as 100 per cent. This would presuppose a municipality with a clear record of debt payment for the past thirty years, with no outside hazard, such as threatens San Francisco, Galveston, lower Florida municipalities, or Mississippi basin districts; with satisfactory debt limits; and with reasonably varied industries. It would further require that the ratio of net debt to assessed valuation, per capita debt, and tax rate all come within the limits prescribed as conservative. For variations from these ideal conditions deductions are made. There is little advantage in devising at this time a rigid set of deductions, for the entire matter is obviously one of judgment. The chief gain from the operation of such a plan is the fact that, whatever system of penalties is used, municipalities will be rated in order of preference. It will further appear that the yields at which the bonds of various cities sell do not always register their credit position. In other words, it is often possible to select bonds with a yield of from $\frac{1}{8}$ to $\frac{1}{4}$ of a point higher than actually appears warranted by the relative risk present. Furthermore, by making the preceding analysis annually for the bonds one holds, it is possible to purchase bonds of second

grade municipalities with small chance of loss. The debt situation can be constantly watched and any undue extension of credit can be detected in time to enable the investor to dispose of his holdings.

Municipal bonds, tax exemption, and yields.—Municipal bonds are exempt from all Federal taxes except inheritance taxes, and may or may not be exempt from local taxes. In the case of Pennsylvania, New York, Connecticut, and Massachusetts, among other states, all or certain municipal bonds are exempt from local as well as Federal taxes. This results in giving the municipal bonds of these states which are exempt a local market. Consequently, they usually sell somewhat higher than so-called "general market" municipals of the same grade. The exemption which municipals enjoy from Federal taxes, as well as their inherent safety as a class, causes them to sell at yields somewhat lower than the yields at which high grade railroad and public utility bonds sell, although the advantage attributable to the tax exempt feature was not offset by a reduction in yield during the period of war taxes. In other words, during years of high taxes, municipal bonds were very attractive in terms of net yield (after taxes) to the taxpayer in the higher income tax brackets. In view of the possibility that income taxes will be further reduced during the next decade, it is likely that future differences in yield between municipals and other classes of bonds will register only their additional safety, in which case the special market attributable to tax exemption will be narrowed. If this view is correct, we may expect their prices in the future to be governed largely by conditions in the money market and to fluctuate in sympathy with prices of high grade corporation bonds.

CHAPTER XXVI

FOREIGN INVESTMENTS

Foreign investments, classification of, according to issuing unit.—In the field of foreign investments there are many of the same distinctions between types of securities, such as bonds and stocks, as are found in the domestic market. The extent to which a given issue of bonds is secured in respect to earnings and assets likewise varies according to the deed of trust under which the bonds are issued. Similarly, there is a classification of stocks as between common or ordinary shares, and preference shares. The type of business conducted by the issuing concern likewise may be used as a basis for classification. In short, all that has previously been said in respect to the classification of domestic securities may be considered to apply to foreign investments.

Foreign civil obligations.—It will help us, however, if we emphasize certain aspects of our classification at this time. One major distinction to be recalled pertains to the issuing unit. Foreign securities may represent the obligations of foreign governments. For many years this was the main type of foreign security traded in in this country. Domestic financial markets have only recently absorbed on a large scale the securities of privately owned foreign corporations. In the case of foreign government securities, a further classification is possible. The obligor may be a central government, such as the Republic of France, the Dominion of Canada, or the United Kingdom; or the issuing unit may be some political subdivision of an empire or a republic. Thus, in Canada, one finds not only bonds issued by the Dominion government, but civil obligations issued by the various provinces, such as bonds of the Provinces of New Brunswick, Ontario, and so on. There are also bonds issued by individual municipalities, such as Ottawa, St. John, and Montreal. This same situation applies in the case of the civil obligations of many other countries.

Foreign corporate securities.—The corporate or joint stock form of business undertaking is prevalent in many of the more developed countries of the world. Accordingly, there are enterprises engaged in various lines of manufacture and mining; in the furnishing of steamship, railroad, or public utility services; and in the banking, insurance, or investment fields. Thus, among some of the more important foreign corporate issues recently floated in the United States, are the following:¹

<i>Country and Enterprise</i>	<i>Date of Issue</i>	<i>Amount Issued</i>
France		
French National Mail S. S. Lines.....	1924	\$10,000,000
International Power Securities Corp. 6½'s.....	1924	4,000,000
Germany		
Fred Krupp, Ltd.	1924	10,000,000
August Thyssen (iron and steel works).....	1925	12,000,000
Central Bank of Agriculture.....	1925	25,000,000
Sweden		
International Match Co.....	1923	15,000,000
Japan		
Toho Electric Power Co.....	1925	15,000,000
Mexico		
Mexican Petroleum Co.....	1921	10,000,000
Peru		
Cerro de Pasco Copper Corp.....	1921	2,755,000
Cuba		
Eastern Cuba Sugar Corporation.....	1922	10,000,000

This table has been presented to bring home the fact that private enterprises organized in foreign countries may be financed in very much the same way that domestic enterprises are financed, that is, by the issue of stocks and bonds. The financial analysis of the foreign corporation, as well as a study of its management, characteristics, and products should be made along similar lines to those prescribed for domestic corporations. The only difference between the two types of securities arises from the fact that the foreign corporate issue

¹ For a complete list of the more important dollar securities of foreign corporations outstanding in the United States in 1925, see Dunn, R. W., "American Foreign Investments," pp. 36-43, 1925, Huebsch and the Viking Press, New York.

suffers or benefits from the political and the economic status of the country in which it is situated, whereas, in the case of domestic securities, we regard this phase of the question as a *constant* in making our analysis.

Foreign securities, classification of.—Another basis of classifying foreign securities involves the currency in which they are payable. Thus, foreign loans may be payable in dollars, in pounds sterling, or in the currency of the country in which they are issued.

Among the various issues of French government bonds commonly quoted in this country are the following, both principal and interest of which are payable in francs:

Republic of France.....	5% National Defense Loan of 1915-1916
Republic of France.....	5% Premium Loan of 1920
Republic of France.....	6% Internal Loan of 1920

On the other hand, the following French issues listed on the New York Stock Exchange are payable, both principal and interest, in dollars:

Republic of France....	25 year Sinking Fund External 8% Loan of 1920
Republic of France....	20 year External 7½% Loan of 1921
Republic of France....	25 year Sinking Fund External 7% Gold Loan of 1924

Foreign currency bonds, risks attached to.—Where the bonds of a foreign country are payable in the currency of the issuing country, the investor assumes the risks arising from fluctuations in exchange. The par of exchange is determined by computing the number of units of one standard coin that are required to supply the gold content of the second standard coin. Thus, the par of exchange as between the pound sterling and the American dollar is 4.8665, which is equivalent to saying that each English pound has the gold equivalent of 4.8665 dollars. Similarly, the par of exchange between Germany and the United States is .2383, which means that a German mark has the gold equivalent of \$.2383.² In the case of

² The par of exchange, in terms of American dollars, is as follows for other leading commercial countries:

Country	Par of Exchange
France (francs)	\$.193
Italy (lira) .....	.193
Brazil (milreis) .....	.3244
Argentina (pesos) .....	.9648
Japan (yen) .....	.4985

countries on an unrestricted gold standard, exchange rates cannot vary very far from par. Otherwise, gold is exported or imported. In such cases, therefore, the risk of exchange fluctuations is slight. In the case of countries on an inconvertible paper standard, however, there may be wide fluctuations in the rate of exchange. Thus, for many years prior to the Great War, the exchange rates between the United States and France did not vary greatly from par. During and particularly after the War, however, there was a rapid drop in the value of the franc as indicated by the following table:³

VALUE OF THE FRANC, NEW YORK

<i>Year</i>	<i>Average</i>
1913	19.27 cents
1915	17.97
1917	17.31
1919	13.68
1921	7.456
1923	6.072
1925	4.767

This situation seriously affected the American holder of bonds payable in francs, for his interest payments, to say nothing of principal payments, were first received in the depreciated currency and had to be converted into dollars before they really became available. To illustrate this more clearly let us consider a specific case. During May, 1927, the quotations on the French 5 per cent National Defense Loan bonds previously listed were approximately \$31 per 1,000 francs. The quotations on the 7 per cent External Loan bonds of 1924 at the same time were about 103½. If we convert the first issue at par, on the assumption that a franc is worth \$.193, then the par for a 1,000 franc bond, in dollars, would be \$193. The bonds were thus quoted, in terms of dollars, at a discount of approximately 84 per cent, while the other issue was selling at a premium of 3½ per cent. Any improvement in exchange rates would yield a profit to the present purchaser of these bonds, whereas any reduction in exchange would cause a further decline in price.

Precisely the same situation applies in the case of other bonds

³ Taken from *Review of Economic Statistics*, "Supplement," December, 1926, p. 250. In July, 1926, the value of the franc reached the low monthly average of 2.466 cents.

payable in foreign currencies. The American investor must figure on converting the foreign currency into dollars before it is available in this country. This involves the risk of exchange operations. Where the country is on an inconvertible paper basis, as many of the European countries were during and after the War, exchange rates are affected, not only by trade balances, but by the extent to which paper currency is issued and prices advance within the issuing country. That is, the domestic depreciation in currency, as indicated by the advance in prices within the country, is reflected in a fall in exchange rates. This is inevitable, since the value of the currency abroad in such cases is determined by the amount of goods it will purchase and not by its nominal par.

Pre-war position of United States in international finance.

—Prior to the Great War the United States did not play a prominent part in international finance. This may be accounted for on several grounds. In the first place, investment opportunities in the domestic market were sufficient to absorb a very large share of our available capital. The rapid industrial growth which took place in this country during the latter part of the nineteenth and the first part of the twentieth centuries brought this situation about. In fact, far from having funds available for investment abroad, there were large amounts of foreign capital invested in the United States. A survey of American history during the nineteenth century shows conclusively that we were a debtor nation until the outbreak of the European War. In 1843 a committee of the House of Representatives estimated the amount of state and city debt held outside the United States at \$150,000,000.⁴ In 1853 the amount of foreign capital invested here was estimated by the Secretary of the Treasury at \$222,000,000,⁵ whereas, by 1860, the amount had risen to approximately \$400,000,000. The Civil War, however, resulted in the resale of a substantial amount of railroad and other securities in the domestic market.

In 1873, when the panic occurred, it is estimated that foreigners owned American securities to the amount of \$1,500,000,000. In 1880, this amount had increased to \$2,000,-

⁴ House Report 296, 27th Cong., 3d sess., March 2, 1843, pp. 3, 7.

⁵ Sen. Exec. Doc. 42, 33d Cong., 1st sess., March 2, 1854, p. 2.

000,000, of which about \$1,535,000,000 represented investment in American railway securities.⁶ At the close of the nineteenth century the amount invested by foreigners in this country was approximately \$3,300,000,000,⁷ whereas, at the close of 1913, foreign investment in American markets amounted to between \$4,000,000,000 and \$5,000,000,000.⁸ On the other side of the ledger, Americans were holding foreign securities in the amount of about \$2,600,000,000,⁹ leaving the debt of this country to foreigners between \$1,500,000,000 and \$2,500,000,000.

Foreign trade prior to the War.—Another reason which explains in part our lack of interest in foreign investments prior to the War is to be found in our foreign trade relations. At no time in its comparatively brief history has this nation been dependent on foreign markets as an outlet for manufactured goods. We did not have the commercial interests abroad that either Germany or England had prior to 1914 and were not, therefore, in a position of having to advance capital for the purpose of stimulating trade. Prior to 1914 our imports and exports, including invisible items, approximately balanced. It is true that, consistently, there was an excess of merchandise *exports* over merchandise *imports*; but this excess was offset by payment for such invisible items as interest on loans held by foreigners, payments for banking and insurance services, tourists' expenditures, and remittances abroad by immigrants. In short our pre-war position in world trade was not such as to encourage an extension of loans in foreign countries.

America's financial position, effect of War on (1914 to 1919).—The emergency created by the Great War required European belligerent nations to use a large part of their capital surplus for military purposes. This, of course, cut off the source from which undeveloped countries outside the war area had been accustomed to borrow. Furthermore, the belligerents themselves, particularly the allied countries, purchased heavily in the American markets both before and after 1917.

⁶ U. S. National Monetary Commission, *Publications*, Vol. 20, p. 173.

⁷ *Yale Review*, Vol. 9, pp. 265-285.

⁸ *Economic World*, n.s.v. 24, p. 413.

⁹ Fisk, H. E., "The Inter-Ally Debts," Bankers Trust Co., New York, p. 306.

England, France, and Belgium relied heavily on America for all sorts of supplies and services throughout the conflict.

Four ways were open to European nations for financing these war purchases. Payments might have been made with gold or with other goods. Up to a certain point gold was used as a means of paying for war purchases. The amount of gold imported into this country as a partial means of offsetting adverse trade balances for the period from June 30, 1914, to December 31, 1919, inclusive, was as follows:

NET IMPORTS OF GOLD INTO UNITED STATES

(In \$1,000)

<i>Year</i>	<i>Net Imports</i>
June 30, 1914, to Dec. 31, 1915.....	\$308,532
1916 (calendar year).....	530,197
1917 (calendar year).....	180,570
1918 (calendar year).....	20,973
1919 (calendar year).....	291,651 *

* Excess of exports (U. S. Statistical Abstract, 1925, p. 437).

The use of gold as a means of meeting continuously adverse trade balances, however, was limited to the amount of gold that could be spared by the banking systems of the belligerent countries.

Another method involved the resale in American markets of domestic securities. This was done on a large scale, it being estimated that between 1914 and 1919 the value of returned securities amounted to about \$2,000,000,000.¹⁰ The fourth, and most widely used, method of financing war purchases in this country was by means of loans floated here. It is estimated that up to 1919 total loans placed in the United States amounted to very nearly \$9,000,000,000. This sum was made up as follows:¹¹

Private Loans floated in United States.....	\$1,520,100,000
Direct Loans of United States Government to European Governments	7,319,500,000

After effects of the War (1919 to 1925).—The effects of the War did not end with the declaration of peace. All of

¹⁰ *Review of Economic Statistics*, Vol. 1, p. 246. D. R. Crissinger places the value even higher, his estimates running as high as \$3,000,000,000. *Economic World*, n.s.v. 24, p. 413.

¹¹ *Review of Economic Statistics*, Vol. 1, p. 248.

the belligerent nations of Europe were impoverished. There was a distinct lack of capital goods with which to reestablish industries on a peace time basis. Devastated regions had to be restored. Currencies required stabilization. In short, the rehabilitation process required large amounts of capital. At the same time, South America, Japan, and other countries, which, previously, had looked to Europe for capital, now had to seek new sources of supply in the absence of a capital surplus in the markets of Europe.

The only nation in a position to meet these enormous demands was the United States. The great productive machinery of this country after the War was in better shape than ever before and the United States had acquired a large share of the world's gold supply, which could be used as the basis for expanding credits.¹² At the same time, this country had a distinct interest in seeing rehabilitation on a large scale in Europe, not only that the market for American goods might be reinstated, but that these nations might become better able to repay their war debts. For trade reasons also it was desirable to encourage the development of newer countries, such as the South American republics.

Another factor that has had a bearing on our position as a creditor nation during the post-war period has been the abundance of loanable funds seeking employment. The development of the Federal Reserve System resulted in a much more efficient use of our gold supply as a basis for credit.

¹² Net imports of gold continued on a large scale from 1920 through 1924, as the result of the post-war demand for goods, the heavy interest payments due the United States, and the continued upheaval of currency systems in European countries. It is estimated that, in 1924, the amount of monetary gold stock in the world was \$9,669,000,000, of which the United States held \$4,547,000,000, or approximately 50 per cent. These statistics and the following table are taken from "U. S. Statistical Abstract," 1925, pp. 232 and 437, respectively.

TABLE SHOWING NET GOLD IMPORTS
(1920 to 1925, in \$1,000's)

<i>Year</i>	<i>Net Imports</i>
1920	\$ 94,977
1921	667,357
1922	238,295
1923	294,073
1924	258,073
1925	134,367 (excess of exports)

This, coupled with the gold imports just referred to, has, during recent years, created an exceptionally easy money market here. It is safe to assume also that national savings mounted rapidly during the years 1921 to 1925, thus adding to the fund of capital seeking employment. It is little wonder, in view of this entire situation, that investors in this country have entered the field of foreign investment on an increasing scale.

Foreign loans of United States, recent estimates of.—We need not concern ourselves with the detail of foreign government obligations held by the United States Government. On October 31, 1927, the total principal amount of such obligations held by the United States amounted approximately to \$10,912,500,000, of which \$6,818,154,785 had been funded.¹³ This is an enormous sum. The annual interest on the principal at 3 per cent amounts to over \$300,000,000.

The statistics of so-called private loans, which foreign governments and corporations have sold in the United States in recent years, indicate the widespread interest that the investing public of this country has shown in foreign investments. The following table¹⁴ shows the amount of foreign securities, exclusive of refunding issues, floated in the American market during the years 1920 to 1927, inclusive:

FOREIGN SECURITY FLOTATIONS IN THE UNITED STATES

(New Capital Issues, in \$1,000,000's)

<i>Year</i>	<i>Amount</i>
1920	\$ 448.7
1921	603.2
1922	750.0
1923	311.8
1924	1,050.0
1925	1,100.0
1926	1,032.8
1927 (first 11 months)	1,193.5

In 1926, the total foreign capital issues, new and refunding, floated in this country, amounted to \$1,286,000,000, of which

¹³ Treasury Department, Monthly Statement of the Public Debt of the United States, October 31, 1927. The reverse side of this statement gives in detail the security holdings of the United States Government.

¹⁴ *Federal Reserve Bulletins*, figures for 1920-1923, from Vol. 10, p. 93; for 1924, Vol. 11, p. 782; for 1925, Vol. 12, p. 148; for 1926, Vol. 13, p. 85; for 1927, Vol. 14, p. 19.

\$726,600,000 were issues of foreign governments, \$547,800,000 were issues of foreign corporations, and \$11,600,000 were issues of the insular possessions of the United States.¹⁵

The current rate at which foreign loans are being distributed in this country and the extent to which distribution is being made among small investors leaves no doubt as to the growing interest in this type of investment.

Foreign investments and international trade: theory of international payments.—It is impossible for a country to have an adverse balance of trade continuously for an indefinite period, including both visible and invisible items, except in the case of gold producing countries, in which case gold assumes the status of any other commodity. Conversely, it is impossible for a country to have a continuously favorable balance of trade, invisible and visible items considered. The reasoning behind these statements involves an analysis of the effect of gold exports and imports on prices. Normally, exports are used to pay for imports. If the balance of trade of a particular country is unfavorable, either gold must be used to meet the deficit, or the deficit must be made up by borrowing. Borrowing operations, however, cannot be continued indefinitely for reasons that are obvious.

The exodus of gold from a country tends to lower prices, which makes the country a good market in which to buy and a poor one in which to sell. Thus, there is set up a series of forces tending to bring exports and imports into balance. The reverse situation applies in the case of countries which have favorable balances of trade for a substantial period. Such countries can lend funds abroad for some time; in other words, they can export capital, but sooner or later gold movements will cause an adjustment in the price level within the country which will tend to restore the balance of exports and imports.

Visible and invisible trade items.—The first effect of a lack of balance between exports and imports is felt in exchange rates. If a country is selling more than it is purchasing, its exchange, that is, the price of drafts on banks within its borders, advances in foreign countries. Similarly, if it is continually

¹⁵ See also Moody, "Manual of Investments, Governments and Municipals," various.

importing more than it is exporting, its exchange falls in other markets and bills on foreign countries advance in price. The reason for this is that, customarily, payments in international trade are made by means of drafts against *balances* or *credits* in the country in which payment is to be made, and, when trade is not balanced, there is a maladjustment between the demand and the supply of drafts on foreign countries.

Credit balances of the nature just described can be created by: (a) sale of goods or services abroad, (b) borrowing, (c) shipment of gold abroad, or (d) receipt of interest on loans previously made abroad. Similarly, such balances have to be drawn against to pay for: (a) goods purchased, (b) principal or interest on loans, (c) services purchased abroad. In other words, there are a number of items that have to be considered when studying fluctuations in exchange rates other than the value of goods exported and imported. Goods exported or imported are known as visible items, whereas loans, interest payments, payments for insurance, shipping, and so on are known as invisible items, because they do not appear in the customs figures. These latter items, however, have just as real an effect on exchange as visible items.

Loans, exchange rates, and trade balances.—When the United States makes a loan to a foreign country, the first effect is similar to the importation of goods. Credits are created here in favor of the foreign nation against which payments may be made for goods and services. In other words, if a particular nation is anxious to increase its imports from this country without shipping gold here, or without changing any of the other factors in the situation, the most obvious method would be to negotiate a loan in our markets. Similarly, if a nation which imports more than it exports wishes to stabilize exchange the same method could be adopted. Or, if a nation, lacking an export surplus, wishes to secure gold from here to stabilize its currency it can do so by borrowing.

However, there is always a day of reckoning. Very shortly, interest becomes due, and the payment of interest to this country has exactly the same effect on exchange rates as increasing our exports. Exchange rates, in terms of the debtor country's currency, decline, whereas, exchange, in terms of the creditor country's currency, rise. In order to offset this, the borrowing country must ship gold, increase its exports of

goods, or do more borrowing. It is needless to say that when the principal comes due the effect is the same.

Thus a nation may encourage loans as a temporary means of facilitating exports to countries whose present trade balances are unfavorable. Loans may likewise be made in new and undeveloped countries, in order to enable them to purchase goods. It must be borne in mind, however, that eventually the repayment of the interest and the principal will depend on the ability of the borrowing nation to develop an excess of exports over imports. The use of gold, except in the case of gold producing countries, is not a permanent method of financing foreign payments, as the world's stock of gold is limited, amounting now to less than \$10,000,000,000; and while foreign loans may *defer* actual payment for foreign purchases, this cannot be considered a permanent basis for financing. Eventually, payment must be made, and for the most part, with other goods or with services.

The importance of scrutinizing the purpose of foreign loans, therefore, becomes evident. If a nation is not to increase its productive resources as the result of a given loan, if it is not to better its position as an exporting nation, or if it does not have a normal excess of exports over imports, then the chance of an ultimate repayment of the loan and possibly of the interest thereon is impaired. However good the intentions of a nation, however rich it is in undeveloped natural resources, as a practical matter payments of foreign obligations must be made, for the most part, in bills of exchange on other nations and the balances against which these are drawn are generally created by the sale of goods.

The United States as a creditor nation, future of.—It is interesting at this point to consider briefly the future of the United States in international trade as the result of recent operations in foreign investment markets. The amount of foreign government obligations held by the United States Government amount to nearly \$11,000,000,000, and private holdings of foreign loans have been estimated at over \$9,000,000,000. If we assume a 3 per cent rate of interest on the former sum and a 5 per cent rate on the latter (which, if anything, is too low), we have an annual interest payment due us of \$780,000,000. The amount of foreign capital invested in our markets to-day is far less than before the War, amounting to not much over \$2,000,000,000. It may, there-

fore, be assumed that the net annual interest payments which are due us amount to nearly \$700,000,000. As against this invisible credit must be considered tourists' expenditures abroad, running, perhaps, as high as \$300,000,000 annually; payment for freight carried in foreign vessels of \$64,000,000; and certain immigrant remittances. If we place invisible debits at \$450,000,000 annually, there remains an annual invisible credit of approximately \$200,000,000 in our favor. As to visible items, there has been no year since the War when our exports were not substantially in excess of our imports, the trade balances from 1920 to 1926, inclusive, being as follows:

EXCESS OF MERCHANDISE EXPORTS OVER IMPORTS

(1920 to 1926, inclusive, in \$1,000,000's)*

<i>Year</i>	<i>Excess</i>
1920	\$2,949.5
1921	1,975.9
1922	719.0
1923	375.4
1924	981.0
1925	683.3
1926	377.8

* "U. S. Statistical Abstract," 1926, p. 443.

The question naturally arises, What will be the ultimate solution of this problem? Borrowing by foreign countries in our markets cannot be increased indefinitely, nor can gold continue to be used as a means of ultimate payment for adverse balances. It would seem that the ultimate security of the huge foreign debt now owing the United States and her citizens will depend on a reversal in our trade figures.

Foreign loans, investment analysis of.—Corporate loans abroad require practically the same type of analysis as domestic corporate loans. The enterprise, the product, the management, and the financial status of the corporation are all factors to be considered. It is quite unnecessary to reiterate all that has been said on this subject.

In addition to a consideration of the particular enterprise, however, it becomes necessary for the investor in foreign corporate securities to give strict attention to a number of general factors which are closely related to the country in which the industry is located. For example, an electric light and power company in Japan may be operating under a very able management, and it may have a good financial set-up.

Knowledge of these facts alone, however, is insufficient. The prospective investor should know specifically the manner in which the enterprise will be affected by the commercial law of the country, as well as something about the moral character of the people. He should also have data relating to the wealth of the country, its banking facilities, the character of its government, the fiscal policy of the government, and various local tax laws. In fact, there are a number of general factors reflecting the status of the country as a whole in which the industry is located which must be considered when purchasing foreign *corporate* securities. These same factors should also be analyzed when studying the obligations of foreign governments. For this reason, we may consider them once and for all without specific reference to either foreign corporate or foreign government obligations.

Factors affecting credit status of issuing country.—The credit of a nation, as well as the credit of corporations within its jurisdiction, is vitally affected by its political position. The nominal form of government is irrelevant, but the inherent capacity of a nation for self-government is crucial. Compare the political stability of a country such as England with a republic such as China, or with some of the Central American republics, where elections are frequently followed by revolutions. Instability of a government adversely affects the stability of the country's credit, whereas, a stable government creates confidence in the obligations of a nation, as well as the obligations of businesses operating within its borders.

The international position of a country is likewise important and is closely related to its political position. The manner in which the country was founded, the length of time it has been in existence, and the solidification of national borders are all matters of interest to the creditors of a nation. Compare, for instance, the state of Poland, which consists of territory taken forcibly from Russia, Germany, and Austria, with a state such as Switzerland, whose borders have remained untouched for centuries, despite successive changes in the map of Europe. The comparative youth of such countries as Yugoslavia, Czechoslovakia, and other countries of Central Europe, created after the recent War, likewise reacts unfavorably on their credit status.

Legal system, constitutional status of.—The legal system under which a country exists is likewise of importance to the

investor. In countries like England, where there is an established body of constitutional and common law, there is no question regarding the rights of parties to enter contracts, nor of the ability to enforce them at law up to the ability of the borrower to pay. Less certain are we of the status of contracts made in countries such as Mexico or Russia. The importance to the investor in foreign securities of a well-developed system of laws and judiciary cannot be overlooked.

International standing.—History of the recent War emphasizes the necessity for considering the position of borrowing countries in respect to the possibility of future wars. The Balkan states, for instance, are in a less stable area than are South American states. For centuries the Balkan countries have been the war center of Europe. Is it likely that human nature has so changed that future wars will be entirely eliminated? If not, then we must consider the possibility, at least, of future conflicts in this area and the effect of such conflicts on the ability of these countries and their industries to meet their obligations. The strength of a country to repel invasion is another factor to consider in making foreign loans.

The international standing of nations also varies in respect to independence. Nations, such as France, Germany, and Great Britain, are sovereign. Likewise, in the case of Federal unions, the states or provinces occupy essentially the same status as our states bear to the United States. The various states of Brazil or the provinces of Argentina, are examples. Then there are so-called autonomous colonies, such as the self-governing dominions of the British Empire and the colonies of the Netherlands. Another form of dependency is found in the case of mandated territory, such as Mesopotamia or Iraq, which is under a British mandate. Finally, there are the free cities, such as Bremen, which has practically a local autonomy, subject to certain spheres of control that are reserved to the German Reich. The investor is naturally interested in the political relations of the area in which he commits his funds with other states or nations.

People, character of.—Many investors regard the moral status of a state as one of the most important factors to be considered when making foreign loans. In the minds of these individuals, ability to pay is important, to be sure; but, after all, the attitude of a people toward their obligations is the real test as to whether they will be promptly met. For centuries

Great Britain has met her obligations promptly and to-day has an enviable reputation among all the nations of the world. The same applies to her subjects. The habit of paying just debts is strong among them. Quite the reverse may be said of certain Central and South American republics. Mexico has the resources and the ability to pay her debts, but has always regarded them lightly. Defaults by Mexico on her foreign loans are by no means uncommon. In 1922, there were over \$500,000,000 of Mexican obligations in default, with unpaid interest amounting to \$200,000,000. An agreement, which was revised in 1925, was entered into at that time providing for certain methods of payment. By 1926 only limited progress had been made in correcting these defaults. While political instability may be given as a partial explanation of this situation, it is undoubtedly true that the Mexican does not regard his obligations in the same light as the average Britisher or American does.

Industrial and social development.—The industrial and social development of a country is an index of its ability to meet its obligations when due. It is not always possible to measure this factor absolutely, but there are, nevertheless, available statistics which throw some light on the subject. Thus the educational standard of a people, and its corresponding advancement in industrial skill, may be judged by literacy statistics which indicate the proportion of the population able to read and write. The nature of the leading industries of a country determines to some extent its productive capacity. In general, agriculture is less remunerative than manufacture, while commerce is more productive than either.¹⁶

Financial status—fixed and current assets.—While it may be true that moral character and past performances are a real factor in public credit, the asset position of a country is also an important item to consider in making foreign loans. Quite regardless of the intentions of a people to meet its obligations, the lack of adequate assets and productive power may make

¹⁶ See Moody's "Investors' Service," *Weekly Letter*, Aug. 2, 1923. The results of a study here set forth show the following ratio of per capita earning power to per capita wealth for countries coming in three groups: commercial, manufacturing, agricultural.

	<i>Per Cent</i>
Commercial	18.30
Manufacturing	14.50
Agricultural	13.65

such payments impossible. Furthermore, the more difficult payment becomes, the greater the urge to default.

The question of assets in respect to foreign government loans may be either specific or general. In some cases, special assets are assigned as a pledge to secure the payment of a debt. The property so pledged may be in the form of stocks and bonds, as in the case of the government of France two-year secured convertible $5\frac{1}{2}$'s of 1917 (converted portion due 1937), or the Republic of Panama $5\frac{1}{2}$'s, due 1953. In the former case, underlying collateral was pledged to the amount of 20 per cent above the loan itself. In the latter case, \$6,000,000 of the \$10,000,000 paid by the United States in purchasing land for the Canal was set aside in a so-called "constitutional fund" and invested in first mortgages on New York city real estate. The income from this fund was pledged as partial security for these bonds. In other cases, the assets pledged may be in the form of goods or property. Thus, in 1922, Brazil floated the $7\frac{1}{2}$ per cent coffee security loan. These bonds, although a direct obligation of the government, were specifically secured by a mortgage on about 4,535,000 bags of coffee. Warrants for this coffee, which is warehoused at Santos, Rio, Victoria, and London, with insurance policies, are deposited with the issuing bankers or their agents abroad until the coffee is sold. The government further agrees to maintain in the hands of the bankers a quantity of coffee, the value of which, at 80 per cent of its current price, together with the market value of any other security in the hands of the bankers, shall be equal in the aggregate to the par amount of the bonds outstanding, together with one year's interest on such bonds. Still a third form of specific security frequently offered to secure foreign loans consists of the revenues from certain taxes, from excises and imposts, or from government monopolies. Where excise taxes are pledged they are generally on certain widely used staples or luxuries. Thus revenues derived from the sugar tax and the gross receipts of the government railroads form the lien security for the republic of Poland 8 per cent bonds due in 1950. The republic of Cuba's 5 per cent loan of 1904 is secured by hypothecation of 15 per cent of the customs receipts of the republic of Cuba, having preference over any other assignment of customs receipts. The republic of Colombia's 6 per cent external gold loan of 1911 and 1913, and the

external $6\frac{1}{2}$ per cent gold notes of 1922 are also secured by a pledge of customs duties.

In contrast with specific asset security of this nature, the asset credit of a nation may be the general fund of wealth of the country. Where the assets of a country are divided into fixed and current, it is customary to include under the former heading natural resources and productive wealth, and, under the latter, earning properties of the government itself. Thus, in a circular advertising the recent $6\frac{1}{2}$ per cent external loan of Bavaria, it is set forth that the state "owns revenue producing properties valued at more than \$500,000,000. Of these, the most important are the state forests and the state hydroelectric systems. Other properties include vineyards, mines, and metallurgical works, the state bank, the state mint, medicinal springs and baths, and the world famous Hofbrau brewery." Indexes of the fixed assets of a nation are: (a) the area of the country (classified as to uses); (b) railroad mileage (frequently reduced to a unit of 1,000 miles of territory, or to a per capita basis); (c) number of telegraph offices; (d) number of telephone instruments (frequently reduced to a per capita basis); (e) motor vehicles (reduced to a per capita basis); and (f) estimated total wealth and wealth per capita.

Government revenues and expenses.—In analyzing the loans of foreign nations, it is also important to study the fiscal policy under which these nations operate, and the results of such operation. Direct taxes form the principal basis for government revenues. In theory, the government has the right to exercise its taxing power without restraint, but in practice there is a limit. The taxing power of a country varies to some extent with its population, but it also varies in proportion to wealth and productivity. The tax rate per capita, therefore, is not in itself conclusive evidence of the taxing power of a nation. In view of the fact that not all wealth need be used productively, the best test of the taxing power of a nation, in the last analysis, is its total income. In all cases, whether total wealth, gross individual income, or net individual income available for taxation is used, it is more satisfactory to reduce data to a per capita basis for comparative purposes. When using income as a basis for determining taxing power, it should be recalled that the rate of increase in taxing power will be faster than the rate of increase in

income. As the income of the taxpayer increases, his ability to contribute to the government increases progressively rather than proportionately.

Other sources of government revenues are earnings derived from proprietary holdings, from fees for administrative services, from excise taxes, and from other forms of indirect taxation. Against total revenues must be set the total expenses of the government. The ability of a nation to meet its obligations is determined not only by receipts but by the net balance, surplus, or deficit remaining after all operating expenses and interest on its public debt are met. Whether a nation is really accumulating a surplus can be determined only by a study of its budget, which involves an analysis of public income and expenses as officially stated by its government for the fiscal period.

Government debt.—The net debt of a nation has the same significance in the case of foreign loans as in the case of domestic civil loans. The investor is naturally interested in the extent to which assets and earning power are already encumbered by previous obligations. Thus net debt may be reduced to a per capita basis and significant comparisons made with the net per capita wealth, or the per capita income of the country.

It is often helpful to carry one's analysis of public debt somewhat further in analyzing foreign securities. In the first place, a nation's debt may be productive or unproductive. Debts incurred for the purpose of constructing railroads, for example, are productive; but debts incurred to finance huge armaments are unproductive. A preponderance of the latter is highly undesirable. Debts may be further classified as internal or external, depending on whether they are held primarily within the state or by foreigners.¹⁷ The payment of

¹⁷ The debt of France was classified on April 30, 1925, as follows:

Internal Debt

Consolidated Debt	frs. 155,252,000,000
Short Term Debt.....	44,275,000,000
Floating Debt	90,357,000,000

frs. 289,884,000,000 or \$11,595,300,000

Total External Commercial Debt.....	1,032,762,170
Total External Political Debt.....	6,163,000,000

Grand Total \$18,791,062,170

(Taken from Moody's "Manual of Investments," Government Vol. 1925,

principal and interest on internal debt is accomplished by merely transferring credits from one set of inhabitants to another and causes no exodus of wealth across the country's borders. The payment of external debt is more difficult, for here is involved a transfer of funds across the borders of the state, a process which requires payment in gold, in goods, or in services. Thus the external debt of France, in so far as it is payable in gold, must be paid at par. The internal debt, however, may be paid with depreciated currency. It probably has already occurred to the reader that, in the case of nations with depreciated currencies, the payment of external loans is aggravated in proportion to the depreciation that occurs in respect to their own currencies. The classification of public debt into short term, floating or unfunded, and long term is helpful, for it indicates the extent to which immediate refinancing will be required.

Currency, value of.—The currency of a country is an effective barometer of its credit standing. The value of a country's currency may be considered either in terms of internal purchasing power or in terms of the goods it can command in foreign trade. Internal purchasing power is measured by index numbers, which indicate the extent to which prices within the country, and in terms of its currency, have advanced or declined in reference to a base period. The external value of a currency is determined by reference to exchange quotations. Prior to the War, the exchange rates of most nations did not vary widely from the par of exchange. Since the War, however, both internal and external currency values have depreciated severely in many countries of the world. This has been occasioned largely by a failure on the part of these countries to balance their budgets, and by the use of fiat money on a large scale to meet deficits.

An excellent statement of the close relationship between domestic financial conditions and the foreign exchange position of a nation is clearly set forth in a statement appearing in the Report of the Dawes Committee on Reparations:¹⁸

For the stability of a country's currency to be permanently maintained, not only must her budget be balanced, but her earnings from

¹⁸ "Report of the First Committee of Experts to the Reparations Commission," April, 1924, Part I, No. VIII (d).

abroad must be equal to the payments she must make abroad, including not only payments for the goods she imports, but the sums paid in reparations. Nor can the balance of the budget itself be permanently maintained except on the same conditions. Loan operations may disguise the position—or postpone its practical results—but they cannot alter it. If reparation can, and must, be provided by means of an inclusion of an item in the budget—i.e., by the collection of taxes in excess of the internal expenditure—it can only be paid abroad by means of an economic surplus in the country's activities.

This contains an excellent lesson for the foreign investor. Countries failing consistently to balance their budgets should be avoided for the purpose of long term investments. Countries with continuously unfavorable trade balances and depreciated currencies should likewise be avoided. Where trade balances remain unfavorable for a long time, or where the internal currency of a country is depreciated and unstabilized (these two phenomena are frequently associated), the payment of external obligations is made increasingly difficult.

Foreign trade.—The relation of the foreign trade of a country to its position as a debtor nation is highly important. The external obligations of a nation, as well as those of its subjects, require payments in foreign countries, and, therefore, involve the whole problem of the international balance of payments. We have already considered the various items constituting the balance sheet of international payments. It is necessary that credits exceed debits in the form of exports over imports, or in the form of an excess of services rendered to, over those performed by, foreigners if a nation is ultimately to pay interest or principal on its debt. The capacity of a nation to meet the service on its foreign debt, therefore, is closely related to its total international trade balance, including both visible and invisible items.

Comparative statistics of selected foreign countries.—For the purpose of illustrating what has just been said in respect to the indexes to be studied in connection with foreign loans, the following charts are presented. All the important statistics suggested are given here for those countries whose government obligations are listed on the New York Stock Exchange.¹⁹

¹⁹ Taken from a study made by Redmond & Co., in 1925, and used by permission. Since this book went to press a 1927 edition of these statistics has been published by this firm.

COMPARATIVE STATISTICS OF ALL COUNTRIES WHOSE GOVERNMENT OBLIGATIONS ARE LISTED ON THE
NEW YORK STOCK EXCHANGE

Country	1	2	3	4	5	6	7	8	9	10	11	12
	Primary Schools	Principal Industries	Area in Square Miles	% Arable and Pasture Land	% Cult- ivated	R.R. Mileage	R.R. Mileage per 1,000 sq. miles	Tele- graph Offices	Tele- phone Instru- ments (000 omitted)	Tele- phone Instru- ments (per 1,000 inhab.)	Motor Vehicles (in thou- sands)	Motor Vehicles (per 1,000 inhab.)
United States...	270,574 ^a	Agriculture, manufacturing, etc.	3,026,789	.....	26.0	250,413	82.1	63,358	10,209	143.7	17,870.9	138.5
Argentina.....	9,940	Agriculture, live stock	1,153,119	74.0	7.9	22,356	10.4	3,700	157	16.4	127.9	13.0
Australia.....	9,611	Wool, wheat, meat	2,074,381	.....	0.9	27,315	9.2	6,987	282	48.3	253.0	43.4
Austria.....	5,213	Manufacturing	32,424	51.6	24.0	4,274	134.0	1,414	136	20.7	25.4	3.9
Belgium.....	8,116	Manufacturing	11,753	57.9	45.5	5,922	504.0	2,810	115	15.0	138.1	18.0
Bolivia.....	450	Mining (tin, silver and copper)	613,900	.....	1.5	1,401	2.3	.....	3	0.9	1.2	0.4
Brazil.....	21,748	Coffee, animal products, sugar	3,275,515	.....	20.0	18,703	5.6	1,008	94	3.1	42.9	1.4
Canada.....	29,307	Agriculture, forest products	3,720,865	15.5	3.1	40,094	10.7	4,930	1,000	109.4	608.6	75.7
Chile.....	3,647	Nitrates, copper, silver	289,828	59.0	23.0	5,667	19.5	641	30	7.9	10.2	2.7
Colombia.....	7,080	Coffee, mining	495,822	.....	.....	1,061	2.1	673	11	1.7	3.1	0.5
Cuba.....	3,754	Sugar, tobacco	44,315	53.6	15.0	3,496	79.0	328	53	15.8	32.4	9.6
Czechoslovakia...	13,775	Textiles, sugar, glassware	54,877	63.0	.....	8,476	154.0	3,688	92	6.8	18.3	1.3
Denmark.....	4,500	Bacon, dairy products, etc.	16,604	76.0	35.0	3,087	186.0	937	279	82.5	63.0	10.0
Dominican Rep...	960	Sugar	10,332	89.0	.....	750	39.0	62	.....	.....	2.3	2.5
Dutch East Indies	14,429	Sugar, rubber, etc.	733,646	.....	55.0 ^c	4,332	15.0	294	36	0.7	43.4	0.9
Finland.....	8,125	Forest products	150,422	8.3	5.2	2,846	10.0	373	68	19.8	8.7	2.5
France.....	81,448	Clothing, textiles, metals, etc.	232,750	73.0	41.0	33,282	156.2	27,635	579	14.8	677.0	17.5
Germany.....	53,438	Metals, chemicals, machinery, etc.	182,404	60.0	43.0	34,317	188.5	47,853	2,078	34.6	350.6	5.8
Great Britain...	26,447	Textiles, iron and steel, coal	94,278	70.0	20.0	20,294	216.7	12,800	1,158	25.0	1,266.4	28.3
Greece.....	7,200	Tobacco, currants	49,022	.....	21.0	1,700	34.7	1,329	5	0.8	5.9	0.9
Haiti.....	911	Coffee, cotton	10,204	.....	.....	175	17.5	43	.....	.....	1.0	0.5
Hungary.....	6,352	Agriculture	31,908	81.7	.....	5,320	166.4	2,092	71	8.9	5.5	0.7
Italy.....	125,000	Silk, textiles, fruit	119,733	86.0	42.0	13,000	108.3	7,810	138	3.5	160.0	4.0
Japan.....	25,660	Silk, textiles, agriculture	148,756	.....	17.0	8,873	60.0	6,243	473	8.0	29.1	0.5
Mexico.....	14,231	Petroleum, mining	767,198	.....	6.0	14,000	14.0	1,950	83	5.8	30.2	2.1
Netherlands...	6,163	Agriculture, commerce	12,585	77.0	30.0	2,392	184.0	1,733	193	27.2	66.0	9.3
Norway.....	9,379	Forest products, fisheries	124,064	.....	3.4	2,148	17.0	2,203	167	62.9	26.6	10.0
Panama.....	384	Agriculture	32,380	.....	.....	295	9.2	33	.....	.....	3.4	7.6
Peru.....	3,086	Sugar, cotton, minerals	533,912	.....	.....	2,077	3.9	321	9	1.6	5.1	0.9
Poland.....	29,765	Coal, sugar, metals	145,590	66.0	49.0	10,428	71.9	3,823	110	4.0	15.3	0.6
Salvador.....	808	Coffee, sugar	13,176	.....	.....	399	30.7	236	3	1.9	1.1	0.7
Serbia, Cr. and Sl.	6,832	Agriculture	96,134	58.2	36.2	6,030	63.0	1,099	24	1.9	6.5	0.5
Sweden.....	.....	Forest Products, iron ore	173,105	11.0	8.6	9,627	56.0	3,487	402	67.0	83.0	14.0
Switzerland.....	4,411	Textiles, watches, machinery	15,985	48.0	35.0	3,592	224.5	2,410	177	45.5	40.0	10.0
Uruguay.....	1,300	Animal products	72,172	85.0	15.0	1,650	23.0	260	24	14.7	22.1	13.8

^a Number of public school buildings in use.

^b State schools.

^c Java and Madeira only.

FOREIGN INVESTMENTS

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Country	13	14	15	16	17	GOVERNMENT EXPENDITURES		19	GOVERNMENT REVENUES			22	23	24	25
						Defense (000 omitted)	Total (000 omitted)		Customs (000 omitted)	Internal Taxation (000 omitted)	Total (000 omitted)				
United States	\$20,970,000	\$186.0	\$320,804	\$2,018	\$675,185	\$3,506,678	\$545,638	\$2,075,157	\$4,012,045	+	\$505,367	\$20,712,000	\$	none	\$
Argentina	922,304	96.6	13,800	1,445	41,659	215,853	136,333	36,131	208,870	+	6,977	352,119	375,755	149,146	
Australia	2,201,092	377.0	10,829	1,850	.....	332,605	122,516	124,933	31,273	+	11,332	1,390,681	810,411	75,000	
Austria	414,000	67.0	3,500	535	.....	138,548	.....	.....	116,830	+	11,718	57,500	356,500	25,000	
Belgium	2,264,075	295.0	11,000	1,435	45,155	416,264	.....	.....	334,352	+	81,912	529,028	672,420	196,750	
Bolivia	42,232	14.0	1,000	334	.....	14,954	.....	.....	12,936	+	6,501	6,501	30,990	30,990	
Brazil	852,058	27.0	16,000	523	29,958	150,321	57,612	60,636	156,888	+	227,527	227,527	624,535	75,818	
Canada	2,412,106	261.0	22,000	2,405	11,123	324,813	121,591	220,544	306,838	+	72,025	1,898,743	367,875	300,874	
Chile	307,500	81.0	3,372	887	13,501	68,137	31,200	.....	66,487	+	1,650	82,817	224,683	52,197	
Colombia	48,754	7.4	1,664	221	3,122	38,151	13,283	16,160	34,442	+	3,709	13,485	20,654	4,245	
Cuba	99,169	33.0	3,209	1,021	11,970	73,868	37,050	.....	91,300	+	17,492	11,948	87,821	87,821	
Czechoslovakia	1,048,215	77.0	9,942	731	68,999	599,819	16,289	200,192	491,739	+	18,080	828,820	219,395	23,098	
Denmark	325,888	100.0	3,366	1,020	.....	67,306	.....	.....	76,076	+	8,680	179,828	146,060	69,357	
Dominican Rep.	15,197	10.8	.....	.....	.....	7,242	3,506	.....	6,171	+	1,071	.....	15,197	15,197	
Dutch East Indies	496,218	16.8	.....	.....	42,692	284,442	22,200	102,327	254,116	+	30,326	251,887	198,665	150,000	
Finland	92,200	20.8	3,000	873	13,212	84,000	26,627	18,309	78,286	+	5,720	10,700	72,900	39,777	
France	21,141,698	534.0	61,000	1,570	265,950	1,594,589	80,204	1,011,168	1,378,258	+	215,702	9,328,450	6,041,052	269,303	
Germany	11,000,000 ^d	183.0	65,000	1,080	107,100	1,090,083	84,728	1,655,457	1,853,116 ^e	+	157,033	689,000	190,400	110,000	
Great Britain	37,400,880	837.0	110,000	2,459	557,442	3,897,470	482,812	2,581,117	3,885,259	+	17,783	38,352,202	5,501,520	259,020	
Greece	504,314	81.0	3,000	486	20,559	95,221	.....	.....	78,870	+	16,351	100,953	376,202	11,000	
Haiti	22,405	11.0	.....	.....	.....	.....	5,990	769	6,759	+	.....	4,383	18,022	18,022	
Hungary	1,116,600	140.0	4,900	613	.....	89,732	.....	.....	98,747	+	9,016	2,300	1,114,300	9,000	
Italy	8,155,841	200.0	30,000	760	151,433	847,702	22,274	450,000	820,947	+	26,755	2,602,059	4,385,153	.....
Japan	2,475,500	42.0	32,200	544	219,016	792,702	40,762	315,206	720,702	+	Balanced	1,724,500	751,000	101,000	
Mexico	528,487	37.0	6,763	475	.....	148,991	30,000	.....	18,991	+	Balanced	1,668,857	383,000 ^f	147,500 ^g	
Netherlands	1,306,312	174.0	8,200	1,165	40,434	311,952	14,370	161,395	285,109	+	20,843	1,177,632	40,000	40,000	
Norway	458,000	173.0	1,818	678	7,385	91,981	20,800	27,186	91,981	+	Balanced	192,865	200,832	109,347	
Panama	9,472	21.2	.....	.....	.....	7,195	.....	.....	5,300	+	1,895	1,600	6,338	6,338	
Peru	57,821	10.5	1,615	293	5,429	32,542	14,960	14,204	32,542	+	Balanced	14,529	28,184	9,387	
Poland	367,619	13.5	12,150	447	125,766	314,450	43,950	38,709	14,259	+	14,259	24,054	342,905	54,082	
Salvador	17,209	10.9	.....	.....	1,536	7,411	5,886	2,843	8,942	+	1,531	6,500	10,709	5,067	
Serbs, Cr. and Sl.	492,100	39.0	7,200	554	21,613	132,550	21,000	.....	139,300	+	6,750	182,947	309,153	18,250	
Sweden	467,481	78.0	5,000	833	.....	166,124	39,951	.....	177,883	+	11,759	231,127	190,187	55,000	
Switzerland	978,201	251.0	8,000	2,050	16,218	101,580	13,050	.....	93,982	+	7,652	887,000	91,000	91,000	
Uruguay	180,435	118.0	1,750	1,100	6,932	45,120	34,000	12,000	45,182	+	62	60,483	128,952	8,942	

^d Tentative figure.^e Under the Dawes Plan, no payments were to be made out of the German budget for the year 1924-1925.^f Including arrears of interest.^g Approximate figure.

COMPARATIVE STATISTICS OF ALL COUNTRIES WHOSE GOVERNMENT OBLIGATIONS ARE LISTED ON THE
NEW YORK STOCK EXCHANGE—Continued

Country	26 Exports Total (000 omitted)	27 Imports Total (000 omitted)	28 Visible Balance of Trade (000 omitted)	29 Exports to U. S. (000 omitted)	30 Imports from U. S. (000 omitted)	31 Food Exports (000 omitted)	32 Food Imports (000 omitted)	33 Cost of Living Index Base—Pre-war=100 ^h	34 Wholesale Prices Index	35 Unit	CURRENCY	
											Parity	Average Exchange Rate for 1924
United States.....	\$4,591,000	\$3,611,000	+\$ 980,000	\$—	\$—	\$666,000	\$947,000	173.54	157.44	Dollar	\$1.00	\$1.00
Argentina.....	790,200	647,471	142,735	75,298	116,998	711,886	78,271	148.04	167.8	Peso (paper)	0.4245	0.3438
Australia.....	626,000	641,100	14,600	32,900	125,200	141,986	22,661	103.602	2,054.84	Pound	4.8665	4.171
Austria.....	250,141	409,223	213,082	5,020	3,190	141,986	103,602	1,366.04	546.0	Schilling	0.14125	0.000014
Belgium.....	638,000	866,213	167,313	65,000	116,000	61,740	222,841	306.0	161.6	Franc	0.193	0.06644
Bolivia.....	35,868	18,530	17,338	1,822	3,028	17,338	2,900	321.04	161.6	Boliviano	0.3893	0.2068
Brazil.....	456,494	330,955	125,539	770,335	65,207	278,500	30,450	124.731	161.6	Milreis	1.2444	0.1094
Canada.....	1,058,763	893,367	165,396	441,643	601,250	493,751	14,000	186.0	161.6	Dollar	0.52	0.9873
Chile.....	196,082	120,198	75,883	92,174	32,059	7,910	14,000	186.0	161.6	Peso	0.9733	0.1054
Colombia.....	74,172	45,681	28,491	57,729	28,692	61,732	4,694	186.0	161.6	Peso	1.00	0.9929
Cuba.....	434,069	290,526	143,543	351,468	192,042	281,466	65,000	186.0	161.6	Peso	1.00	0.9998
Czechoslovakia.....	510,060	475,860	34,800	22,400	1,950	93,000	120,000	904.0	1,019.0	Crown	0.2026	0.0295
Denmark.....	398,120	436,785	38,665	6,118	43,413	243,010	93,670	214.0	236.0	Kroner	0.268	0.1672
Dominican Republic.....	26,043	18,245	7,798	9,824	13,041	22,068	5,231	214.0	236.0	Dollar	1.00	U. S. \$
Dutch East Indies.....	534,817	241,172	293,645	54,900	12,100	248,489	34,736	170.04	175.0	Florin	0.402	0.3821
Finland.....	124,141	117,834	6,307	7,520	15,733	10,640	47,068	1,210.0	1,131.0	Mark	0.193	0.0251
France.....	2,170,955	2,101,743	66,078	147,600	281,700	209,410	466,659	386.0	513.1	Franc	0.193	0.05237
Germany.....	1,562,911	2,217,498	654,500	139,300	440,500	100,000	665,222	136.0	142.3	Mark	0.193	0.2382
Greece.....	4,132,223	5,653,155	1,520,932	366,500	982,000	383,164	2,530,400	173.04	157.74	Pound	4.8665	4.4171
Haiti.....	57,256	131,434	74,178	27,000	17,000	19,441	46,329	1,449.0	1,449.0	Drachma	0.193	0.0179
Hungary.....	115,000	140,560	25,560	1,338	11,251	11,251	4,573	1,449.0	1,449.0	Gourde	0.20	0.20
Italy.....	623,991	844,948	220,957	75,004	187,040	165,000	200,000	602.0	2,117.84	Crown	0.2026	0.000017
Japan.....	744,399	1,010,551	266,152	372,311	335,497	43,000	148,000	204.3	204.3	Yen	0.4985	0.4119
Mexico.....	355,747	152,233	203,514	167,100	135,100	15,000	23,000	155.0 ^m	155.0	Peso	0.4985	0.4851
Netherlands.....	604,263	945,413	281,150	23,262	108,272	222,637	210,829	273.0	279.0	Florin	0.402	0.3821
Norway.....	148,282	215,770	67,488	21,200	23,200	30,287	70,131	273.0	279.0	Kroner	0.402	0.1394
Panama.....	2,579	12,675	10,096	2,230	8,553	8,553	.....	.....	.....	Balboa	1.00	1.00
Peru.....	102,842	73,829	29,013	24,402	19,065	26,000	14,000	189.0	206.2	Pound	4.8665	4.0949
Poland.....	243,952	285,882	41,930	2,800	4,000	60,000	57,000	189.0	141.0	Zloty	0.193	0.193
Salvador.....	17,058	8,777	8,280	6,518	5,353	16,491	1,379	177.0	168.0	Colon	0.50	0.50
Sweden, Cr. and Sl.....	121,142	104,416	16,726	491	686	50,109	85,388	177.0	168.0	Dinar	0.193	0.0128
Switzerland.....	335,422	375,637	40,215	40,000	42,300	16,942	85,388	169.0 ^m	165.9	Kroner	0.268	0.2652
Uruguay.....	387,730	483,272	95,535	35,600	27,552	105,232	10,000	133.0	165.9	Franc	0.193	0.1822
Yugoslavia.....	88,060	92,716	4,656	7,070	18,222	45,000	10,000	133.0	165.9	Peso	1.0342	1.0342

^hAs published by the League of Nations and the U. S. Department of Commerce. These figures being internal, are not based on gold values, but express the actual levels of prices in the respective currencies. Figures are of March 31, 1925, where not otherwise stated.

ⁱJune, 1925 ^jDecember, 1924. ^k000 omitted. ^mFoodstuffs only. ⁿFebruary, 1925. ^pAverage exchange rate for twenty years to 1920.

The various column headings are mostly self-explanatory. Columns 3 to 12, inclusive, deal with indexes showing the productive and social development of the country. Columns 13 to 16 deal with wealth and debt statistics. Government expenditures are given under two headings—defense and total. Revenue statistics indicate the sources of government income by major divisions. Revenues less expenses equal surplus or deficit. Debt is classified in columns 23, 24, and 25, according as it is internal or external, while the amount of loans in the United States is shown separately. Columns 26 to 37 deal with foreign trade data, currency values, and exchange rates. Currency values are shown, of course, by the indexes of living costs and wholesale prices for each country.

Analysis of general factors in foreign loans, purpose of.—

In the purchase of foreign loans, particularly in the case of government borrowings, there are a number of factors to consider which pertain to the terms under which the loan is issued. It is true that many aspects of the instruments under which foreign securities are issued are similar to those found in the corporate deed of trust or mortgage under which domestic loans are floated, or in the contract made between the civil unit and the lender in the case of domestic civil loans. It will serve no useful purpose to duplicate our previous discussion in this respect. We shall, however, emphasize briefly certain matters that should be given special attention in the case of foreign loans. For reasons already stated, particular attention should be paid to the purpose for which borrowing is undertaken, especially in the case of government borrowings. Loans for purely productive purposes, for rehabilitation of devastated regions, and for currency stabilization, where properly supervised, are perfectly proper and legitimate. Loans for military expenses, and for the purpose of balancing current budget deficits, indicate poor financing and should be discouraged.²⁰

²⁰ Quotation from an address by President Coolidge, Nov. 19, 1925 (see *Commercial and Financial Chronicle*, Nov. 21, 1925, p. 2482).

"If rightly directed they (American loans) ought to be of benefit to both lender and borrower. If used to establish industry and support commerce abroad, through adding to the wealth and productive capacity of those countries, they create their own security and increase consuming power to the probable advantage of our trade. But when used in ways that are not productive, like

Payment and place of issue.—External loans are usually adapted to the terms of the lending country. Consequently, they are payable at some financial institution in the currency of the lending country. In some cases, however, external loans are issued in the currency of the borrowing country, as in the case of the republic of France national defense 4 per cent loan of 1918. Interest on these bonds is payable quarterly at Paris and London. Payments in London are made at the rate of exchange ten days before the interest date. Unless specifically secured by the pledge of collateral, there is no legal reason why both external and internal loans should not have the same status. Matters of expediency, however, may cause a nation to pay its external loans in times of crises before it meets payments on its internal loans.

Date of maturity.—In this country we are accustomed to deal in bonds which have a definite maturity date, although, in some instances, the term of the bond is so long that, to all intents and purposes, it is perpetual. European nations, on the other hand, have outstanding obligations that are perpetual. Thus the various issues of republic of France rentes carry a written agreement to pay a specific yearly income, 3 per cent in the case of most issues, but they have no set time for redemption. The British consols are similar in certain respects, but differ in others. Thus the 2½ per cent consols of the United Kingdom, issued in 1888, were issued as not redeemable until on or after April 5, 1923, after which date they may be redeemed by an act of Parliament.

Security and guaranties.—Consideration has already been given to certain instances where foreign government loans have been secured by the pledge of specific assets, or by a lien against customs duties or government revenues of one kind or another. In other instances, additional security is given to foreign loans by some sort of guaranty by a government other than the issuing power. Such a guaranty may be moral or absolute. Thus, the United States, it is generally believed, would hold itself responsible for the payment of obligations of the Philippine Islands, of Porto Rico, or of the Hawaiian

the maintenance of great military establishments, or to meet municipal expenditures which should either be eliminated by government economy or supplied by taxation, they do not serve any useful purpose and should be discouraged."

Islands, although it is not legally liable. On the other hand, the guaranty may be absolute. The republic of Austria guaranteed 7 per cent gold bonds of 1923, issued under the auspices of the League of Nations, are guaranteed as to principal and interest, as well as to redemption payments, by the following states in the proportions indicated:

	<i>Per Cent</i>
Great Britain	24½
France	24½
Czechoslovakia	24½
Italy	20½
Belgium	2
Sweden	2
Denmark	1
Holland	1

Sinking funds and redemption.—Prior to the War, the credit of the stronger nations was such that sinking fund provisions were not generally required, although, in the case of loans issued by small nations, sinking fund provisions were not uncommon. The theory underlying the use of sinking funds or serial issues is much the same in the case of foreign government obligations as in the case of domestic loans. Through the use of such devices, it is planned to retire all or a part of an issue of bonds before maturity.

General sinking fund provisions which call for the issuing government to pay a certain sum annually into a sinking fund to be operated by itself are not always effective. A better plan, and the one now commonly used, provides for the payment of definite sums annually to specified trustees for the purpose of meeting interest on the loan as well as for retiring a certain amount of the bonds annually. In connection with the Czechoslovak government external sinking fund 8 per cent gold loan of 1924 (series B), for example, the Czechoslovak republic agrees to pay weekly for remittance to Baring Bros. & Co., in London, at least 1-52d part of the total annual requirements for the service of the loan, the London bankers agreeing to remit to New York a proportionate part of these weekly payments applicable to the dollar bonds. This issue is redeemable by a cumulative sinking fund of 1 per cent per annum, beginning October 1, 1924, applied semiannually to the purchase of bonds under par, or, if bonds are not so ob-

tainable, to drawings at par, first redemption by lot taking place April 1, 1925. Bonds not previously retired by the sinking fund are payable October 1, 1952. (In addition, these bonds are secured by a first specific charge on the receipts from customs duties and on the net profits of the government tobacco monopoly.)

A modified type of sinking fund requires that payments be made into the fund for use only when the bonds of a country fall below a certain price. In this way, it is expected to stabilize the market price of the bonds. Thus, there is a provision in respect to the India 5 per cent War Loan of 1917 to the effect that a sum equal to $1\frac{1}{2}$ per cent of the loan shall be set aside annually for sinking fund purchases when the market price of the bonds falls below 95.

The provisions surrounding the redemption of foreign bonds are usually similar to those found in the case of domestic bonds. Purchases made for account of sinking funds may be selected by drawings, if sufficient bonds are unavailable at the specified prices. In the case of serial bonds, redemption is made in the serial order specified at the time of issue. It often happens that callable features are present in the case of foreign issues similar to those found in domestic loans.

Lottery loans.—A rather unique type of loan issued by some European nations is known as the lottery loan. Such bonds are issued on the basis of the psychological appeal of chance. Thus France, in its 5 per cent Lottery Loan of 1919 (1st issue), provided for four drawings each year, at which one bond is drawn for redemption at frs. 1,000,000; one at frs. 500,000; five at frs. 100,000; and ten at frs. 50,000 each; in all 68 bonds annually. The French government guarantees premiums, interest, and the amounts drawn.

Summary.—The field of foreign investment is rapidly assuming an important rôle in American finance. Not only has our present position as the world's most important creditor nation compelled us to enter this field, but our growing interest in foreign markets, and the failure of domestic investment opportunities to expand as rapidly as our fund of capital, has stimulated the process. The coming years will undoubtedly see our knowledge of, and experience in, this field increase rapidly. While it is true that foreign investments have offered most attractive opportunities during the past half decade, we

yet have much to learn regarding this type of security. Many of the foreign issues recently floated in this country have been outstanding for too short a time to enable one to make a proper estimate of their true worth, or the extent to which they may subsequently be affected by adverse trade balances or unsettled political conditions.

PART IV
INVESTMENTS

CHAPTER XXVII

MATHEMATICS OF INVESTMENT

Yields of securities contrasted with price.—About the first technical term one comes in contact with when considering investments is that of “yield” or “basis.” Bonds are quoted to yield a certain rate, such as 5.25, 4.70, and so on. In fact, the mere price at which a given bond is quoted in itself means nothing. A bond with ten years to run to maturity, with a $5\frac{1}{2}$ per cent coupon rate of interest, selling at 104.7, is really cheaper, in terms of income, than is a $5\frac{1}{2}$ per cent coupon bond with six years to run, which is selling at 103.22. The first bond, although selling at a greater premium, nevertheless yields to the purchaser a return of 4.9 per cent while the latter yields only 4.875 per cent.

The investor, therefore, is far more interested in the return which he receives on his investment than in the matter of price. The price at which a bond is quoted is only one of three factors which determine the effective yield on the investment. The other two are the length of time the bond has to run to maturity and the coupon rate of interest.¹

Yields and values, computation of, from bond tables.—In practice the yield of a bond may be determined by the use of bond tables if one knows: (1) the price at which the bond is selling; (2) the coupon or stated rate of interest; and (3) the length of time the bond has to run to maturity. Or it is possible to determine from a bond table the price at which a bond will have to sell to give a desired yield, if one knows, in addition to the yield sought, the coupon rate of interest and the length of time to maturity. In fact, given any three of these factors, the fourth may be derived from the ordinary bond table.

¹ A fourth factor might be the length of period between income dates. Interest payments on some bonds are made annually, on others quarterly; but in most cases interest is payable semiannually.

Formula for determining table of bond values and yields.—While we shall take up in detail the use of bond tables a little later on, it may help the student the better to grasp the problem if we first consider the algebraic processes by which the bond table itself is constructed. The value of a bond consists of two sums: (a) the present value of the redemption price (usually par); and (b) the present value of an annuity consisting of the interest or dividend payments on the par value of the bond.

Compound interest and discount.—In finding the present worth of any given sum, it is first necessary to consider the formula for computing compound interest. This is derived as follows:

$$\begin{aligned}\text{Let } n &= \text{number of interest periods.} \\ N &= \text{rate per period.}\end{aligned}$$

Then the valuation of \$1 at compound interest for n periods at N rate is $(1 + N)^n$.

Thus, let us assume that \$1 is invested at compound interest, computed semiannually, for ten years at 6 per cent. Substituting in our formula we have

$$(1 + N)^n = (1 + .03)^{20} = (1.03)^{20}$$

The computations in this case are facilitated by the use of logarithms.

$$\begin{aligned}\text{The log of } 1.03 &= 0.012837 \\ \text{Log } (1.03)^{20} &= .25674 = \text{log of } 1.8061 \\ 1.8061 &\text{ is the desired amount.}\end{aligned}$$

The present worth of a sum discounted at a given rate of interest is the reciprocal of the sum at compound interest. That is, compound discount is the reciprocal of compound interest. The present worth of \$1 at compound discount for n periods at N rate thus becomes $\frac{1}{(1 + N)^n}$.

Valuations of annuities.—With this in mind, it next becomes necessary to work out a formula for determining the present worth of the entire group or series of coupons, or interest payments attached to the bond. Such a series of payments is known as an annuity certain; that is, it is a series of equal amounts paid at regular intervals. To this must be added the

present worth of the principal sum, for, as was seen, the purchase of the bond is the agreed present worth of each and all coupon payments at their respective due dates, in addition to present value of the principal, all at compound discount at the effective yield.

The formula for determining the present worth of an annuity of \$1 for any given number of payments is as follows:

Let a = the unknown quantity, the present worth of such a series.

i = the interest rate for each period (.03 in the case of a bond with interest at 6 per cent payable semiannually).

n = the number of periods (twenty in number in the case of a ten-year bond with semiannual interest payments).

$$\text{The present worth of the 1st payment} = \frac{1}{(1+i)}$$

$$\text{The present worth of the 2d payment} = \frac{1}{(1+i)^2}$$

$$\text{The present worth of the 3d payment} = \frac{1}{(1+i)^3}$$

and so on for any known number of payments.

Since we are seeking to derive a general formula for any number (n) payments, it is possible to state the series as follows:

$$a = \frac{1}{(1+i)} + \frac{1}{(1+i)^2} + \frac{1}{(1+i)^3} \cdots \frac{1}{(1+i)^{n-2}} + \frac{1}{(1+i)^{n-1}} + \frac{1}{(1+i)^n}$$

or, reduced to simple terms,

$$a = \frac{1 - \frac{1}{(1+i)^n}}{i}$$

This represents the present worth of an annuity of \$1. The present worth of any amount (T) will be

$$a = T \left(\frac{1 - \frac{1}{(1+i)^n}}{i} \right)$$

Construction of formula for bond values.—Up to this point we have assumed that we knew the rate at which we were to discount our various sums. The i , or rate of discount up to this point, has been assumed as the coupon rate of interest specified in the bond. This is the nominal rate, to be sure, but it is not the effective rate which, as we have seen, is generally quite different from the coupon or normal rate. In the problem at hand, the coupon rate really is the annuity. That is, if the face amount is \$1, and the rate is 6 per cent per annum, payable semiannually, the annuity is .03. Thus, to adapt our formula to this situation,

Let x = the present worth of the face amount of the bond plus the present worth of the annuity of the coupons.

c = the coupon or nominal rate: that is, the rate per period, which would be .03 for a 6 per cent bond.

i = the true income rate; that is, the computed income return of the given bond at the purchase price. This, it will be recalled, is the unknown quantity in the present case, being the purchase price. For the sake of uniformity, however, we shall continue to use i as the symbol for the unknown quantity.

Our formula for the present worth of \$1 is

$$\frac{1}{(1+i)^n}$$

This is also the present worth of the principal in the assumed case, where the face value of the bond was taken at \$1. Again, it will be recalled that the present worth of an annuity is

$$\frac{1 - \frac{1}{(1+i)^n}}{i}$$

Since the face amount is \$1, the amount of the annuity is the coupon rate per period, or c . The present value of the coupons, discounted at rate i , then becomes,

$$c \left(\frac{1 - \frac{1}{(1+i)^n}}{i} \right)$$

or

$$\frac{c}{i} \left(1 - \frac{1}{(1+i)^n} \right)$$

If we add the present worth of the par value of the bond and the present worth of the coupons we have

$$x = \frac{1}{(1+i)^n} + \frac{c}{i} \left(1 - \frac{1}{(1+i)^n} \right)$$

The second part of this equation may be simplified as follows:

$$\begin{aligned} x &= \frac{1}{(1+i)^n} + \frac{c}{i} \left(\frac{(1+i)^n - 1}{(1+i)^n} \right) \\ &= \frac{1}{(1+i)^n} + \frac{c(1+i)^n - c}{i(1+i)^n} \\ &= \frac{1}{i(1+i)^n} + \frac{c(1+i)^n - c}{i(1+i)^n}, \quad \text{or} \quad x = \frac{i + c(1+i)^n - c}{i(1+i)^n}. \end{aligned}$$

Exponential equation, solution of by trial and error.—In this form all the quantities of the equation are known except i . x is the purchase price; c is the coupon rate (i per period); and n is the number of periods the bond has to run. It would at first seem that this equation, with only one unknown quantity, could be solved directly. The unknown quantity, however, is exponential. It appears in the equation with many powers. Thus in a 20-year bond the term $(1+i)$ would have to be expanded to the 40th power, which would give the unknown i with every power from the square to the 80th power. The only method of solution, therefore, is by trial and error.

In order to show how this formula may be used in this way, let us assume that a 6 per cent 30-year bond is purchased at 105; required the net yield. Substituting in the formula

$$\begin{aligned} 1.05 &= \frac{i + .03(1+i)^{60} - .03}{i(1+i)^{60}} \\ 1.05i(1+i)^{60} &= .03(1+i)^{60} + i - .03 \end{aligned}$$

The bond having been purchased at a premium, it is evident that the net yield is less than .03 semiannually. Solving by approximation, let us try .029.

$$\begin{aligned} 1.05 \times .029(1 + .029)^{60} &= .03(1 + .029)^{60} + .029 - .03 \\ 1.05 \times .029(1.029)^{60} &= .03(1.029)^{60} - .001 \end{aligned}$$

The use of logarithms will facilitate the solution from this point on.

<i>Left Side of Equation</i>	}	<i>Right Side of Equation</i>	
log 1.05 = 0.02119	|	log .03 = 8.47712 - 10	
log .029 = 8.46240 - 10	|	log (1.029) ⁶⁰ = 0.74520	
log (1.029) ⁶⁰ = 0.74520	|		- .001
log <u>9.22879 - 10</u>	|	log <u>= 9.22232 - 10</u>	
.1693		.1678	
<hr style="width: 50%; margin: 0;"/>		<hr style="width: 50%; margin: 0;"/>	
.1693	>	.1668	

.028 may next be tried: (.028 - .03 = -.002).

log 1.05 = 0.02119	|	log .03 = 8.47712 - 10	
log .028 = 8.44716 - 10	|	log (1.028) ⁶⁰ = 0.71940	
log (1.028) ⁶⁰ = 0.71940	|		- .002
log <u>9.18775 - 10</u>	|	log <u>9.19652 - 10</u>	
.1541		.1572	
<hr style="width: 50%; margin: 0;"/>		<hr style="width: 50%; margin: 0;"/>	
.1541	<	.1552	

The effective yield, i , is thus seen to lie between .028 and .029, based on a semiannual basis, or between 5.6 and 5.8 per cent, based on an annual basis. This same method might be continued, starting with an assumed yield of .0281, .0282, and so on. It would be found that .0282 would come very close to satisfying the equation, thus giving an approximate yield in the assumed case of 5.64 per cent.

Analysis of bond tables: tables in common use.—Although we have indicated the mathematical formula by which the yield of a given bond may be determined, one would scarcely attempt to compute the yield of a given issue in this way. The investor, in practice, depends almost entirely on tables of bond values for computations of this nature. In these tables one finds prices worked out for an extended range of maturities, yields, and coupon rates. The results are customarily presented in the form of a table for each maturity. By the use of such tables, it is very easy to determine with reasonable accuracy the net yield of a bond, when the price, the maturity date, and the redemption value are known. Similarly, it is possible to determine the price at which a bond of known redemption value and maturity must be purchased in order to give a specified return.

There are a number of bond tables in common use. We shall illustrate briefly the Johnson,² the Sprague,³ and the Equitable tables.⁴ The Johnson tables show yields at various prices to the third decimal. (Prices corresponding to yields most commonly found vary by 25c. intervals per \$100 unit.) Tables are presented for bonds with coupon rates of $3\frac{1}{2}$, 4, $4\frac{1}{4}$, $4\frac{1}{2}$, 5, $5\frac{1}{2}$, 6, $6\frac{1}{2}$, 7, $7\frac{1}{2}$ and 8 per cent. Unlike other tables in common use, the Johnson tables give yields directly for various prices, coupon rates, and maturities. In addition the Johnson tables include data which provide a quick and ready means of determining the yield of any bond which has a "repayment value" (or redemption price) greater than its face value. The Sprague table shows the value to the nearest cent of a bond for \$1,000,000, bearing interest from 3 to 7 per cent, and yielding from $1\frac{1}{4}$ to 10 per cent. The Sprague table is really divided into three parts: one dealing with usual rates, from $2\frac{1}{2}$ to 5 per cent; another

² Johnson, David C., Stone, Caleb, Cross, Milton C., Kircher, Edward A., "Yields of Bonds and Stocks in per cent, correct to the nearest five ten-thousandths of one per cent, and tables for the ready determination of Yields of Bonds to be repaid at a Premium," 1928, Prentice-Hall, Inc., 70 Fifth Avenue, N. Y.

³ Sprague. Chas. E., "Complete Bond Tables," 1915, The Ronald Press, New York.

⁴ Bartholomew, James P., "Equitable Trust Company of New York Rapid Bond Tables." Published by permission of Equitable Trust Company of New York.

JOHNSON TABLE

Yields in per cent per annum,
correct to the nearest five ten-thousandths of one per cent,
interest payable semi-annually.

5%**BOND**

Price	18 Years	18½ Years	19 Years	19½ Years	20 Years	20½ Years	21 Years	Current Income
90	5.910-	5.895	5.881-	5.868-	5.855	5.843	5.832-	5.556-
90½	5.861	5.847	5.834-	5.821	5.809	5.798	5.787	5.525-
91	5.813	5.800-	5.787	5.775	5.764-	5.753	5.743	5.495-
91½	5.765	5.753-	5.741-	5.729	5.719-	5.709-	5.699	5.464
92	5.717	5.706-	5.685-	5.684	5.674	5.665-	5.656-	5.435-
92½	5.670	5.659	5.649-	5.639-	5.630-	5.621-	5.612	5.405
93	5.623	5.613	5.603	5.594	5.586-	5.577	5.570-	5.376
93½	5.577-	5.567	5.558	5.550-	5.542-	5.534	5.527-	5.348-
94	5.531-	5.522-	5.514-	5.506-	5.498	5.491	5.485-	5.319
94½	5.485-	5.477-	5.469	5.462-	5.455	5.449-	5.443-	5.291
95	5.439	5.432-	5.425-	5.418	5.412	5.407-	5.401-	5.263
95½	5.394-	5.387	5.381	5.375	5.370-	5.365-	5.360-	5.236-
96	5.349-	5.343	5.338-	5.332	5.328-	5.323-	5.319-	5.208
96½	5.304	5.299	5.294	5.290-	5.286-	5.282-	5.278-	5.181
97	5.260-	5.256-	5.251	5.248-	5.244-	5.240	5.237	5.155-
97½	5.216-	5.212	5.209-	5.206-	5.203-	5.200-	5.197-	5.128
98	5.172	5.169	5.167-	5.164-	5.162-	5.159	5.157	5.102
98½	5.129-	5.126	5.124	5.123-	5.121-	5.119	5.117	5.076
99	5.085	5.084	5.083-	5.081	5.080	5.079	5.078-	5.051-
99½	5.043-	5.042-	5.041	5.041-	5.040-	5.039	5.039-	5.025
100	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
100½	4.958-	4.958	4.959	4.960-	4.960	4.961-	4.961	4.975
101	4.916-	4.917	4.918	4.920-	4.921-	4.922-	4.923	4.950
101½	4.874-	4.876	4.878	4.880-	4.882-	4.883	4.885-	4.926
102	4.832	4.835	4.838-	4.840	4.843-	4.845	4.847	4.902-
102½	4.791	4.795-	4.798-	4.801	4.804	4.807-	4.810-	4.878
103	4.750	4.754	4.758	4.762	4.766-	4.769	4.772	4.854
103½	4.709	4.714	4.719	4.723	4.728-	4.731	4.735	4.831-
104	4.669	4.675-	4.680-	4.685-	4.690-	4.694	4.698	4.808-
104½	4.629-	4.635	4.641	4.647-	4.652-	4.657-	4.662-	4.785-
105	4.589-	4.596-	4.602	4.609-	4.614	4.620	4.625	4.762-
105½	4.549	4.557-	4.564	4.571-	4.577	4.583	4.589	4.739
106	4.510-	4.518	4.526-	4.533	4.540	4.547-	4.553	4.717-
106½	4.471-	4.479	4.488-	4.496-	4.504-	4.511-	4.518-	4.695-
107	4.432-	4.441	4.450	4.459-	4.467	4.475-	4.482	4.673-
107½	4.393-	4.403	4.413-	4.422	4.431-	4.439-	4.447-	4.651
108	4.354	4.365	4.376-	4.385	4.395-	4.403	4.412-	4.630-
108½	4.316	4.328-	4.339-	4.349	4.359-	4.368	4.377-	4.608
109	4.278-	4.290	4.302-	4.313-	4.323	4.333	4.342	4.587
109½	4.240	4.253	4.265	4.277-	4.288-	4.298	4.308	4.566
110	4.203-	4.216	4.229-	4.241	4.253-	4.263	4.274-	4.545
111	4.128-	4.143-	4.157-	4.170	4.183-	4.195-	4.206	4.505-
112	4.054	4.070	4.086-	4.100	4.114-	4.127-	4.139	4.464
113	3.981	3.999-	4.015	4.031-	4.046-	4.060-	4.073	4.425-
114	3.909	3.928	3.946-	3.963-	3.978	3.993	4.008-	4.386-
115	3.838	3.858	3.877	3.895-	3.912-	3.928-	3.943	4.348-
116	3.768-	3.789	3.809	3.828	3.846-	3.863-	3.879	4.310
117	3.698	3.721-	3.742-	3.762-	3.781-	3.799-	3.816-	4.274-
118	3.629	3.653-	3.675	3.696	3.716	3.735	3.753	4.237
119	3.561	3.586	3.610-	3.632-	3.653-	3.673-	3.692-	4.202-
120	3.494-	3.520-	3.544	3.568-	3.590-	3.611-	3.631-	4.167-
121	3.427	3.454	3.480	3.504	3.528-	3.549	3.570	4.132
122	3.361	3.390-	3.416	3.442-	3.466-	3.489-	3.510	4.098
123	3.296-	3.325	3.353	3.380-	3.405-	3.429-	3.451	4.065
124	3.231	3.262-	3.291-	3.319-	3.345-	3.369	3.393-	4.032
125	3.167	3.199	3.229	3.258-	3.285-	3.311-	3.335-	4.000
126	3.104-	3.137-	3.168	3.198-	3.226-	3.252	3.278-	3.968
127	3.041	3.075	3.108-	3.138	3.167	3.195-	3.221-	3.937
128	2.979	3.014	3.048-	3.079	3.109	3.138-	3.165-	3.906
129	2.918-	2.954	2.988	3.021	3.052	3.081	3.109	3.876-
130	2.857-	2.894	2.930-	2.963	2.995	3.025	3.054	3.846

dealing with lower rates, $1\frac{1}{4}$ to $2\frac{1}{2}$ per cent, and a third dealing with the higher rates, 5 per cent to 10 per cent. By the use of certain tables, it is possible to work out values for bonds whose interest is payable quarterly or annually. The Equitable table is designed to facilitate interpolation for time. Differences for months and days are contained under each value (see p. 731, following).

Computation of yield for an even period.—A specimen page from the Johnson table is shown on page 724. Let us assume that we have a 5 per cent coupon bond, maturing in just twenty years, which is quoted at 103. To find the yield by the Johnson tables one has but to turn to the page headed 5 per cent bond, and run down the 20-year column to the yield corresponding to the price 103. The corresponding yield is 4.766—per cent. The proposition in practice, however, is generally complicated by the fact that the actual price at which the bonds are selling is not given in the bond tables, for it would be a prodigious task to work out tables for every conceivable price. Thus, in the table given, prices vary by intervals of $\frac{1}{2}$ dollar from 90 to 110, thereafter by intervals of one dollar. Had the price of our bond been 102.80 instead of 103, we could have determined by inspection that the yield of the bond was between 4.766— and 4.804, but we could arrive at the correct yield only by interpolation. Thus for a 20-year, 5 per cent bond, selling at 102.80, the computations would be as follows:

	103.00	4.766
	102.50	4.804
Differences	.50	.038

That is, a difference of .5 in price makes a difference of .038 in yield. By interpolation, the correct yield for a bond selling at 102.80 is $4.804 - 30/50 \times .038$, or 4.7812 per cent.⁵ This method of interpolation, even where computed with considerable accuracy, is not entirely correct, for the intervals in price do not vary proportionately with intervals in yield. The following section of the Sprague tables will illustrate this. These tables are here used because they are carried out farther and indicate more clearly the above situation.

⁵ Note that the price, 102.80, is $30/50$ (.6) of the entire distance, so to speak, from 102.50 to 103.00. This entire range in price represents a difference in yield of .038 per cent; $30/50$ of the range, therefore, results in a difference of —.0228 per cent.

SECTION FROM SPRAGUE TABLES

(Values to Nearest Cent, of a Bond for \$1,000,000 at 5 Per Cent Interest,
Payable Semiannually)

—————DERIVED BY AUTHOR—————			
<i>Net Yield</i>	<i>20 Years</i>	<i>Difference in Net Yield</i>	<i>Difference in Price</i>
4.00	\$1,136,777.40		
4.05	1,129,370.64	.05	\$7,406.76
4.10	1,122,027.08	.05	7,343.56
4.15	1,114,746.14	.05	7,280.94
4.20	1,107,527.22	.05	7,218.92
4.25	1,100,369.73	.05	7,157.49
4.30	1,093,273.10	.05	7,096.63

In interpolating, by proportion, the assumption is that both intervals are constant. The error, however, is so small that, for all practical purposes, it is not considered. It is possible, however, to correct this by the method of differences. See Sprague, "Complete Bond Tables" (4th ed.), p. 121.

Interpolation for time.—Another complication is almost always injected into the problem, because the length of time the bond has to run to maturity rarely falls on an even six months' period. Bond tables are worked out for six months' intervals and not for days. Thus, while one finds tables for bonds maturing in 6 months, 1 year, 1½ years, 2 years, and so on, most bonds mature at intervening periods. This requires a still further interpolation. Assume that a 5 per cent bond, maturing on November 1, 1942, is quoted on August 16, 1927, at 102.75. Required the yield. It is apparent that this bond does not mature in 15 years, but in 15 years, 2 months, and 15 days.⁶ In this case it is necessary to determine the yield of the bond both for a 15 year maturity and a 15½ year maturity. The next step requires interpolation between these two yields to determine the yield of a bond running 15 years, 2 months, and 15 days. For the computations here involved we shall refer to the Sprague tables on the following pages.

⁶ In computing the length of time bonds have to run, it is customary to assume 30 days to the month, except in the case of very large transactions.

SPRAGUE TABLES

(Values, to the Nearest Cent, of a Bond for \$1,000,000 at 5% Interest,
Payable Semiannually)

Net Income	13 Years	13½ Years	14 Years	14½ Years	15 Years
2 50	I 276 015 66	I 284 953 74	I 293 781 47	I 302 500 22	I 311 111 33
2 55	I 269 642 20	I 278 343 32	I 286 934 90	I 295 418 32	I 303 794 94
2 60	I 263 307 30	I 271 774 24	I 280 132 51	I 288 383 53	I 296 528 66
2 65	I 257 010 71	I 265 246 20	I 273 373 99	I 281 395 50	I 289 312 12
2 70	I 250 752 18	I 258 758 93	I 266 659 03	I 274 453 91	I 282 144 95
2 75	I 244 531 45	I 253 312 16	I 259 987 33	I 267 558 40	I 275 026 79
2 80	I 238 348 28	I 245 905 60	I 253 358 58	I 260 708 66	I 267 957 26
2 85	I 232 202 43	I 239 539 00	I 246 772 49	I 253 904 35	I 260 936 02
2 90	I 226 093 65	I 233 212 07	I 240 228 75	I 247 145 15	I 253 962 69
2 95	I 220 021 69	I 226 924 55	I 233 727 08	I 240 430 72	I 247 036 93
3 00	I 213 986 32	I 220 676 17	I 227 267 17	I 233 760 76	I 240 158 38
3 05	I 207 987 29	I 214 466 68	I 220 848 73	I 227 134 92	I 233 326 69
3 10	I 202 024 38	I 208 295 79	I 214 471 48	I 220 552 91	I 226 541 52
3 15	I 196 097 33	I 202 163 26	I 208 135 13	I 214 014 41	I 219 802 52
3 20	I 190 205 93	I 196 068 83	I 201 839 40	I 207 519 09	I 213 109 34
3 25	I 184 349 93	I 190 012 23	I 195 583 99	I 201 066 66	I 206 461 66
3 30	I 178 529 11	I 183 993 22	I 189 368 64	I 194 656 80	I 199 859 12
3 35	I 172 743 23	I 178 011 53	I 183 193 05	I 188 289 21	I 193 301 41
3 40	I 166 992 06	I 172 066 93	I 177 056 96	I 181 963 58	I 186 788 18
3 45	I 161 275 39	I 166 159 15	I 170 960 09	I 175 679 61	I 180 319 11
3 50	I 155 592 99	I 160 287 95	I 164 902 16	I 169 437 01	I 173 893 87
3 55	I 149 944 62	I 154 453 08	I 158 882 91	I 163 235 48	I 167 512 14
3 60	I 144 330 08	I 148 654 30	I 152 902 07	I 157 074 72	I 161 173 60
3 65	I 138 749 14	I 142 891 37	I 146 959 36	I 150 954 45	I 154 877 92
3 70	I 133 201 58	I 137 164 05	I 141 054 54	I 144 874 36	I 148 624 80
3 75	I 127 687 18	I 131 472 08	I 135 187 32	I 138 834 18	I 142 413 92
3 80	I 122 205 74	I 125 815 25	I 129 357 46	I 132 833 62	I 136 244 96
3 85	I 116 757 03	I 120 193 31	I 123 564 69	I 126 872 39	I 130 117 63
3 90	I 111 340 84	I 114 606 02	I 117 808 75	I 120 950 22	I 124 031 60
3 95	I 105 956 96	I 109 053 16	I 112 089 39	I 115 066 82	I 117 986 59
4 00	I 100 605 18	I 103 534 49	I 106 406 36	I 109 221 92	I 111 982 28
4 05	I 095 285 29	I 098 049 78	I 100 759 41	I 103 415 25	I 106 018 38
4 10	I 089 997 09	I 092 598 82	I 095 148 28	I 097 646 52	I 100 094 58
4 15	I 084 740 37	I 087 181 36	I 089 572 72	I 091 915 48	I 094 210 61
4 20	I 079 514 92	I 081 797 18	I 084 032 50	I 086 221 84	I 088 366 15
4 25	I 074 320 55	I 076 446 07	I 078 527 37	I 080 565 35	I 082 560 93
4 30	I 069 157 05	I 071 127 80	I 073 057 08	I 074 945 74	I 076 794 66
4 35	I 064 024 22	I 065 842 15	I 067 621 39	I 069 362 75	I 071 067 04
4 40	I 058 921 86	I 060 588 91	I 062 220 07	I 063 816 11	I 065 377 80
4 45	I 053 849 78	I 055 367 85	I 056 852 87	I 058 305 57	I 059 726 65
4 50	I 048 807 78	I 050 178 76	I 051 519 57	I 052 830 87	I 054 113 32
4 55	I 043 795 67	I 045 021 43	I 046 219 92	I 047 391 76	I 048 537 53
4 60	I 038 813 24	I 039 895 64	I 040 953 71	I 041 987 98	I 042 999 01
4 65	I 033 860 32	I 034 801 19	I 035 720 68	I 036 619 28	I 037 497 47
4 70	I 028 936 70	I 029 737 86	I 030 520 63	I 031 285 42	I 032 032 65
4 75	I 024 042 21	I 024 705 45	I 025 353 31	I 025 986 14	I 026 604 29
4 80	I 019 176 64	I 019 703 75	I 020 218 51	I 020 721 20	I 021 212 11
4 85	I 014 339 83	I 014 732 56	I 015 116 00	I 015 490 36	I 015 855 85
4 90	I 009 531 57	I 009 791 67	I 010 045 56	I 010 293 37	I 010 535 26
4 95	I 004 751 69	I 004 880 89	I 005 006 96	I 005 130 00	I 005 250 06
5 00	I 000 000 00	I 000 000 00	I 000 000 00	I 000 000 00	I 000 000 00

728 INVESTMENT PRINCIPLES AND PRACTICES

SPRAGUE TABLES

(Values, to the Nearest Cent, of a Bond for \$1,000,000 at 5% Interest,
Payable Semiannually)

<i>Net Income</i>	<i>15½ Years</i>	<i>16 Years</i>	<i>16½ Years</i>	<i>17 Years</i>	<i>17½ Years</i>
2 50	I 319 616 13	I 328 015 93	I 336 312 03	I 344 505 71	I 352 598 23
2 55	I 312 066 09	I 320 233 12	I 328 297 33	I 336 260 01	I 344 122 45
2 60	I 304 569 26	I 312 506 67	I 320 342 22	I 328 077 22	I 335 712 95
2 65	I 297 125 21	I 304 836 13	I 312 446 22	I 319 956 79	I 327 369 15
2 70	I 289 733 55	I 297 221 06	I 304 608 84	I 311 898 22	I 319 090 50
2 75	I 282 393 87	I 289 661 03	I 296 829 62	I 303 900 99	I 310 876 43
2 80	I 275 105 78	I 282 155 60	I 289 108 09	I 295 964 58	I 302 726 41
2 85	I 267 868 88	I 274 704 35	I 281 443 77	I 288 088 51	I 294 639 89
2 90	I 260 682 79	I 267 306 84	I 273 836 22	I 280 272 27	I 286 616 33
2 95	I 253 547 11	I 259 962 66	I 266 284 96	I 272 515 36	I 278 655 19
3 00	I 246 461 46	I 252 671 39	I 258 789 54	I 264 817 28	I 270 755 95
3 05	I 239 425 45	I 245 432 61	I 251 349 53	I 257 177 57	I 262 918 07
3 10	I 232 438 72	I 238 245 91	I 243 964 40	I 249 595 73	I 255 141 04
3 15	I 225 500 88	I 231 110 88	I 236 633 90	I 242 071 28	I 247 424 34
3 20	I 218 611 56	I 224 027 12	I 229 357 40	I 234 603 74	I 239 767 47
3 25	I 211 770 39	I 216 994 23	I 222 134 54	I 227 192 66	I 232 169 90
3 30	I 204 977 00	I 210 011 81	I 214 964 89	I 219 837 57	I 224 631 15
3 35	I 198 231 04	I 203 079 46	I 207 848 00	I 212 537 99	I 217 150 72
3 40	I 191 532 13	I 196 196 79	I 200 783 47	I 205 293 48	I 209 728 10
3 45	I 184 879 93	I 189 363 41	I 193 770 86	I 198 103 58	I 202 362 82
3 50	I 178 274 07	I 182 578 94	I 186 809 77	I 190 967 83	I 195 054 38
3 55	I 171 714 21	I 175 843 00	I 179 899 78	I 183 885 81	I 187 802 31
3 60	I 165 200 00	I 169 155 20	I 173 040 48	I 176 857 05	I 180 606 14
3 65	I 158 731 08	I 162 515 18	I 166 231 46	I 169 881 12	I 173 465 38
3 70	I 152 307 12	I 155 922 55	I 159 472 32	I 162 957 60	I 166 379 58
3 75	I 145 927 77	I 149 376 96	I 152 762 66	I 156 086 04	I 159 348 26
3 80	I 139 592 70	I 142 878 02	I 146 102 08	I 149 266 03	I 152 370 98
3 85	I 133 301 57	I 136 425 38	I 139 490 20	I 142 497 13	I 145 447 27
3 90	I 127 054 05	I 130 018 68	I 132 926 62	I 135 778 93	I 138 576 68
3 95	I 120 849 80	I 123 657 57	I 126 410 95	I 129 111 01	I 131 758 77
4 00	I 114 688 51	I 117 341 67	I 119 942 82	I 122 492 96	I 124 993 10
4 05	I 108 569 84	I 111 070 66	I 113 521 84	I 115 924 37	I 118 279 22
4 10	I 102 493 47	I 104 844 16	I 107 147 64	I 109 404 84	I 111 616 69
4 15	I 96 459 08	I 98 661 85	I 100 819 84	I 102 933 96	I 105 005 10
4 20	I 90 466 36	I 92 523 37	I 94 538 07	I 96 511 33	I 98 444 01
4 25	I 84 514 99	I 86 428 39	I 88 301 97	I 90 136 57	I 91 932 99
4 30	I 78 604 66	I 80 376 56	I 82 111 17	I 83 809 27	I 85 471 63
4 35	I 72 735 05	I 74 367 56	I 75 965 31	I 77 529 06	I 79 059 51
4 40	I 66 905 87	I 68 401 05	I 69 864 04	I 71 295 54	I 72 696 22
4 45	I 61 116 81	I 62 476 70	I 63 806 99	I 65 108 33	I 66 381 35
4 50	I 55 367 55	I 56 594 19	I 57 793 82	I 58 967 07	I 60 114 49
4 55	I 49 657 82	I 50 753 18	I 51 824 18	I 52 871 36	I 53 895 24
4 60	I 43 987 30	I 44 953 37	I 45 897 72	I 46 820 84	I 47 723 21
4 65	I 38 355 70	I 39 194 43	I 40 014 10	I 40 815 15	I 41 597 99
4 70	I 32 762 73	I 33 476 04	I 34 172 98	I 34 853 91	I 35 519 21
4 75	I 27 208 10	I 27 797 90	I 28 374 01	I 28 936 77	I 29 486 46
4 80	I 21 691 51	I 22 159 68	I 22 616 88	I 23 063 36	I 23 499 37
4 85	I 16 212 70	I 16 561 09	I 16 901 23	I 17 233 33	I 17 557 56
4 90	I 10 771 36	I 11 001 81	I 11 226 76	I 11 446 32	I 11 660 64
4 95	I 05 367 22	I 05 481 55	I 05 593 12	I 05 702 00	I 05 808 24
5 00	I 00 000 00	I 00 000 00	I 00 000 00	I 00 000 00	I 00 000 00

The price of our bond (102.75) falls between the prices 1,032,032.65 and 1,026,604.29 at 15 years. The yields at these prices are, respectively, 4.75 and 4.70 per cent. Interpolating we have the following results:

	4.70				1,032,032.65
	4.75				1,026,604.29
Yield Difference	<u>.05</u>		Price Difference		<u>5,428.36</u>
	4.70			1,032,032.65	
	x			1,027,500.00	
				<u>4,532.65</u>	

$$x = 4.70 + .05 \frac{4,532.65}{5,428.36} = 4.70 + .04175 = 4.74175$$

Similarly for a 15½ year bond

	4.70			1,032,762.73
	4.75			1,027,208.10
Yield Difference	<u>.05</u>	Price Difference		<u>5,554.63</u>
	4.70			1,032,762.73
	x			1,027,500.00
				<u>5,262.73</u>

$$x = 4.70 + .05 \frac{5,262.73}{5,554.63} = 4.70 + .0474 = 4.7474$$

The difference in yield between a 15 and a 15½ year bond is as follows:

15½ year bond	.....	4.74740
15 year bond	.....	4.74175
		<u> </u>
180 days	.....	.00565
75 days	.....	x
75		
<u> </u>	× .00565 = x	
180		
	x = .00235	

Since it is true that the longer a premium bond has to run the higher the yield, and since our point of time is $\frac{75}{180}$ of the period between a 15 and 15½ year bond, we must add .00235

to the yield of a 15 year bond. Our desired result, therefore, is

Yield of 15 year bond.....	4.74175
Plus difference for 75 days.....	.00235
	<hr/>
Yield for a 5 per cent bond running 15 years and 75 days.....	4.74410

Ascertain value of a bond, knowing yield, coupon rate, and maturity.—The converse situation requires the investor to compute the value of a bond, knowing the yield at which it is to sell. For example, required the price of a 5 per cent bond running 15 years, 2 months, 15 days, to yield 4.75.

At 15½ years the value is.....	1,027,208.10
At 15 years the value is.....	1,026,604.29
	<hr/>
Difference for 6 mos.....	603.81
Difference for 75 days = $\frac{75}{180} \times 603.81$	= 251.59
Desired value	
Value for 15 year bond.....	1,026,604.29
Plus added value for 75 days.....	251.59
	<hr/>
	1,026,855.88

The method of proportion again is not absolutely accurate, for the amortization or accumulation for each day is taken as $\frac{1}{180}$ of the half year's total, although the interest proceeds by multiplication and the multiplicand increases each day. (The error is so slight that it may be ignored in every day practice unless very large sums are being invested.)

Interpolation for time based on Equitable tables.—The Equitable Trust Company Rapid Bond Tables are designed to facilitate interpolation between six months' periods. These tables are constructed for bonds bearing interest at rates of 3, 3½, 4, 4½, 5, 6, and 7 per cent, and maturing in from six months to fifty years in half yearly periods, with basic yields ranging from 3 per cent to 6 per cent, in advances of 5-100 of 1 per cent, with ⅛, ⅜, ½, and ¾ differences.

Each basic price is followed by the decimal difference to six places for one month, and also for one day, between each six months' period. In this way it is very easy to establish the price basis of a bond which has other than an even number of years or half years to run. On page 732, is a section of

EQUITABLE BOND TABLES

20 YEARS

Interest Payable Semiannually

% Per Annum	3%	3½%	4%	4½%	5%	6%	7%	% Per Annum
4.50	80.3549 .050216 .001673	86.9032 .033466 .001115	93.4516 .016733 .000557	100.0000	106.5484 .016733 .000557	119.6451 .050216 .001673	132.7419 .083066 .002788	4.50
4.55	79.7870 .051366 .001712	86.3073 .034783 .001159	92.8276 .018216 .000607	99.3480 .001666 .000055	105.8683 .014916 .000497	118.9090 .048033 .001601	131.9496 .081183 .002706	4.55
4.60	79.2241 .052483 .001749	85.7166 .036083 .001202	92.2090 .019666 .000655	98.7015 .003283 .000109	105.1940 .013116 .000437	118.1789 .045916 .001530	131.1638 .078733 .002624	4.60
4 ⅝	78.9446 .053033 .001767	85.4232 .037016 .001223	91.9018 .020400 .000680	98.3804 .004083 .000130	104.8589 .012250 .000408	117.8161 .044883 .001496	130.7733 .077516 .002583	4 ⅝
4.65	78.6663 .053600 .001786	85.1310 .037350 .001245	91.5958 .021116 .000703	98.0666 .004883 .000162	104.5253 .011366 .000378	117.4549 .043833 .001461	130.3844 .070316 .002543	4.65
4.70	78.1134 .054666 .001822	84.5506 .038583 .001286	90.9879 .022516 .000750	97.4251 .006433 .000214	103.8623 .009650 .000321	116.7368 .041800 .001393	129.6113 .073950 .002465	4.70
4.75	77.5654 .055716 .001857	83.9753 .039800 .001326	90.3852 .023883 .000796	96.7951 .007966 .000265	103.2049 .007966 .000265	116.0247 .039800 .001326	128.8445 .074033 .002387	4.75
4.80	77.0222 .056733 .001891	83.4049 .040966 .001365	89.7877 .025216 .000840	96.1704 .008466 .000315	102.5531 .006300 .000210	115.3185 .037816 .001260	128.0840 .069333 .002311	4.80
4.85	76.4839 .057733 .001924	82.8396 .042116 .001403	89.1953 .026516 .000883	95.5510 .010916 .000363	101.9067 .004683 .000156	114.6181 .035883 .001196	127.3295 .067083 .002236	4.85
4 7/8	76.2165 .058216 .001940	82.5588 .042700 .001423	88.9010 .027166 .000905	95.2433 .011659 .000388	101.5856 .003883 .000129	114.2701 .034933 .001164	126.9546 .065983 .002199	4 7/8
4.90	75.9503 .058700 .001956	82.2792 .043250 .001441	88.6080 .027800 .000926	94.9369 .012250 .000411	101.2658 .003083 .000102	113.9235 .033983 .001132	126.5813 .064866 .002162	4.90
4.95	75.4214 .059633 .001987	81.7236 .044350 .001478	88.0258 .029050 .000968	94.3280 .013766 .000458	100.6302 .001533 .000051	113.2346 .032116 .001070	125.8390 .062700 .002090	4.95
5.00	74.8972 .060550 .002018	81.1729 .045416 .001513	87.4486 .030283 .001009	93.7243 .015133 .000504	100.0000	112.5514 .030283 .001009	125.1028 .060550 .002018	5.00
5.05	74.3776 .061450 .002048	80.6270 .046466 .001548	86.8764 .031483 .001049	93.1257 .016483 .000549	99.3751 .001500 .000050	111.8738 .028466 .000948	124.3725 .058450 .001948	5.05
5.10	73.8627 .062333 .002077	80.0858 .047483 .001582	86.3090 .032650 .001088	92.5322 .017816 .000593	98.7554 .002966 .000098	111.2017 .026716 .000890	123.6481 .056383 .001879	5.10
5 1/8	73.6069 .062766 .002092	79.8170 .047983 .001599	86.0272 .033233 .001107	92.2373 .018450 .000615	98.4475 .003700 .000123	110.8678 .025833 .000861	123.2881 .055366 .001845	5 1/8
5.15	73.3522 .063183 .002106	79.5494 .048500 .001616	85.7465 .033783 .001126	91.9437 .019100 .000636	98.1409 .004416 .000147	110.5352 .024966 .000832	122.9295 .054366 .001812	5.15
5.20	72.8462 .064000 .002133	79.0175 .049450 .001648	85.1889 .034916 .001163	91.3602 .020366 .000678	97.5315 .005816 .000193	109.8741 .023266 .000775	122.2167 .052366 .001745	5.20
5.25	72.3447 .064800 .002160	78.4903 .050400 .001680	84.6359 .036000 .001200	90.7816 .021600 .000720	96.9272 .007200 .000240	109.2184 .021600 .000720	121.5907 .050400 .001680	5.25
% Per Annum	3%	3½%	4%	4½%	5%	6%	7%	% Per Annum

Interest Payable Semiannually

20 YEARS

EQUITABLE BOND TABLES

20 YEARS

Interest Payable Semiannually

% Per Annum	3%	3½%	4%	4½%	5%	6%	7%	% Per Annum
5.25	72.3447 .064800 .002160	78.4903 .050400 .001680	84.6359 .035000 .001200	90.7816 .021600 .000720	96.9272 .007200 .000240	109.2184 .021600 .000720	121.5097 .050400 .001680	5.25
5.30	71.8476 .065583 .002180	77.9677 .051333 .001711	84.0878 .037083 .001236	90.2079 .022816 .000760	96.3279 .008550 .000285	108.5681 .019966 .000665	120.8083 .048483 .001616	5.30
5.35	71.3548 .066333 .002211	77.4496 .052233 .001741	83.5443 .038116 .001270	89.6390 .024000 .000800	95.7337 .009883 .000329	107.9231 .018350 .000611	120.1126 .046583 .001552	5.35
5¼	71.1101 .066716 .002223	77.1922 .052683 .001756	83.2743 .038033 .001287	89.3563 .024566 .000818	95.4384 .010533 .000351	107.6026 .017566 .000585	119.7668 .045650 .001521	5¼
5.40	70.8664 .067083 .002230	76.9359 .053100 .001770	83.0054 .039133 .001304	89.0749 .025150 .000838	95.1444 .011183 .000372	107.2834 .016766 .000558	119.4224 .044716 .001490	5.40
5.45	70.3823 .067816 .002260	76.4267 .053966 .001798	82.4711 .040116 .001337	88.5156 .026300 .000876	94.5600 .012450 .000415	106.6489 .015216 .000507	118.7377 .042900 .001430	5.45
5.50	69.9024 .068500 .002283	75.9219 .054800 .001826	81.9414 .041100 .001370	87.9609 .027400 .000913	93.9805 .013700 .000456	106.0195 .013700 .000456	118.0586 .041100 .001370	5.50
5.55	69.4267 .069183 .002306	75.4214 .055600 .001853	81.4162 .042050 .001401	87.4110 .028483 .000949	93.4058 .014933 .000497	105.3953 .012200 .000406	117.3848 .039350 .001311	5.55
5.60	68.9551 .069833 .002327	74.9253 .056400 .001880	80.8955 .042983 .001432	86.8656 .029533 .000984	92.8358 .016116 .000537	104.7761 .010750 .000358	116.7165 .037600 .001253	5.60
5½	68.7209 .070150 .002338	74.6783 .056783 .001892	80.6367 .043416 .001447	86.5047 .030066 .001002	92.5526 .016700 .000556	104.4684 .010033 .000334	116.3843 .036750 .001225	5½
5.65	68.4877 .070466 .002348	74.4334 .057166 .001905	80.3791 .043866 .001462	86.3249 .030583 .001019	92.2706 .017283 .000576	104.1620 .009300 .000310	116.0534 .035900 .001196	5.65
5.70	68.0244 .071100 .002370	73.9458 .057933 .001931	79.8672 .044766 .001492	85.7886 .031600 .001053	91.7100 .008433 .000614	103.5529 .007883 .000262	115.3957 .034233 .001141	5.70
5.75	67.5651 .071700 .002390	73.4623 .058650 .001955	79.3506 .045616 .001520	85.2568 .032583 .001086	91.1541 .010550 .000651	102.9486 .006516 .000217	114.7432 .032583 .001086	5.75
5.80	67.1098 .072266 .002408	72.9830 .059366 .001978	78.8563 .046466 .001548	84.7295 .033550 .001118	90.6028 .020650 .000688	102.3493 .005166 .000172	114.0958 .030966 .001032	5.80
5.85	66.6584 .072833 .002427	72.5087 .060200 .002006	78.3572 .047266 .001575	84.2066 .034500 .001150	90.0560 .021716 .000723	101.7548 .003833 .000127	113.4536 .029383 .000979	5.85
5¾	66.4342 .073100 .002436	72.2718 .060400 .002013	78.1003 .047683 .001589	83.9468 .034966 .001165	89.7843 .022250 .000741	101.4594 .003183 .000106	113.1344 .028616 .000953	5¾
5.90	66.2110 .073366 .002445	72.0367 .060716 .002023	77.8624 .048066 .001602	83.6881 .035416 .001180	89.5138 .022783 .000759	101.1651 .002533 .000084	112.8165 .027833 .000927	5.90
5.95	65.7675 .073900 .002463	71.5666 .061366 .002045	77.3717 .048833 .001627	83.1739 .036333 .001211	89.0760 .023800 .000793	100.5802 .001250 .000041	112.1844 .026316 .000877	5.95
6.00	65.3278 .074400 .002480	71.1065 .062000 .002066	76.8852 .049600 .001653	82.6639 .037200 .001240	88.4426 .024800 .000826	100.0000	111.5574 .024800 .000826	6.00
% Per Annum	3%	3½%	4%	4½%	5%	6%	7%	% Per Annum

Interest Payable Semiannually

20 YEARS

these tables for bonds maturing in 20 years. At what price will a 5 per cent bond having 20 years, 3 months, and 6 days to run sell to yield 5.60?

Price for 20 year bond.....	92.83580
.016116 \times 3 (mos.).....	.048348
.000537 \times 6 (days).....	.003222
Subtract .....	.05157
Price for a 20 year, 3 mos., and 6 day bond.....	92.78423

In the case of a premium bond, of course, it becomes necessary to add the difference, for the longer such a bond has to run to maturity the greater the premium must be to effect a given yield. This is in contrast to a discount bond, where the longer the bond runs to maturity the greater the discount. At what price must a 6 per cent bond, having 20 years, 3 months, and 6 days to run, sell to yield 5.60?

Price for a 20 year bond.....	104.7761
.010750 \times 3 (mos.).....	.032250
.000358 \times 6 (days).....	.002148
	.034398
Price for a 20 year, 3 mos., and 6 day bond.....	104.810498

Bonds of optional duration.—Many bonds which have a definite maturity date are nevertheless redeemable at the option of the issuing company before maturity. The terms under which redemption may take place are various.⁷ They may be callable any time after issuance, at a specified date, before a definite date, between certain dates, or on and after a stated date. They may be called at par or at a premium. All these matters, of course, have an effect on value or yield.

In as much as the length of time the bond has to run is the variable quantity, the problem is to find whether the earliest or latest maturity should be used in computing the price or the return. Within certain limits the interests of the borrower and lender are antagonistic, and the option of payment lies with the borrower. Therefore, the lender should adopt the most conservative basis of computation and figure the value, or return of his investment on the least favorable basis.

Rule for computing bonds redeemable at par.—If the cost of the bond and the redemption price are both 100, or par, then the duration is of no consequence, for both the coupon rate and the effective yield is the same.

⁷ See Chapter IX.

If the cost is below par, that is, if the bond is purchased at a discount, and the redemption price is par, then the longer the duration the less the yield. The investor, therefore, should compute his yield on the basis of ultimate maturity.

Conversely, when the cost is above par, or at a premium, and the bonds are redeemable at par, then the longer the bonds run the greater the yield. Therefore, in such cases, it is proper to assume the shortest time the bond may run.

Rule for computing bonds redeemable at a premium.—If the cost of the bond is par, or less than par, when the redemption is at a premium the bond will have the lowest yield if held to maturity. The investor in this case should assume ultimate maturity.

If the cost and the redemption are both at a premium, it is necessary first to compute the net return to maturity. If the price which corresponds to this return for a bond running to the redemption date is less than the redemption price, the investor should assume that the bond will not be called and should make his computations on the basis of so-called ultimate maturity. Conversely, if the basis price is above the call price, the yield should be computed for the shortest period the bonds may run. In the latter case, the customary designation for, say, a 30 year, 6 per cent bond, callable at 20 years is 20-30 (or 1947-57). If the bonds are quoted to sell at a 5.50 basis to 1947, they are referred to as selling on a 5.50-6 per cent basis, meaning that they will net $5\frac{1}{2}$ per cent if called in 1947, and 6 per cent for as long as they run thereafter.

Computation of yields for serial issues.—In buying an issue of bonds known as “serials,” where a certain portion of the issue matures periodically, investment dealers sometimes average the life of the issue and then, by the use of bond tables, base their computations on the average maturity. A more accurate method requires that a separate price be computed for each maturity, and the average of these prices taken. The error in the first method arises from the fundamental principle that the net return on a bond is based on reinvesting at compound interest a certain portion of the coupons as they severally become due. Each maturity of a serial issue must be computed upon its time, in order that this principle of compounding the interest may have its own application.

Accrued interest.—Stocks are often quoted “flat,” that is,

the price includes the price of the stock plus any "accrued dividends." This is invariably true of stocks sold on the New York Stock Exchange. In the case of unlisted preferred stocks which are offered by investment bankers, however, they may be quoted "and accrued dividends." Bonds not in default are generally quoted "and accrued interest," while bonds in default and income bonds are usually quoted "flat," any accrued interest being included in the price. Where bonds or stocks are quoted "and accrued interest," it is necessary to make a further adjustment before the actual price to the purchaser is obtainable. Thus, let us assume that on the first of September a purchase is made of a 20 year, 5 per cent bond, the interest dates of which are January 1 and July 1, at 113.68 and accrued interest. The purchaser will pay \$1,136.80, which is the principal and premium of the bond, and also he will pay the interest on \$1,000, the face value of the bond, from July 1 to September 1 at 5 per cent. This is equivalent to \$8.33 on a \$1,000 bond. In other words, the coupon, which matures the following January 1 to the amount of \$25, may be said to start ripening immediately after July 1. On September 1 it has acquired a value to 1-3 of its entire value, or \$8.33. The purchaser, therefore, pays \$1,136.80, plus \$8.33, or \$1,145.13.

Computation of yields for bonds sold flat.—It is sometimes desired to ascertain what a bond will yield at a given price when sold "flat" (which means that the purchaser pays no accrued interest). A 20 year bond, bearing 5 per cent interest, payable semiannually, February and August, is offered for sale on April 1, at 115 "flat." What is the effective yield? The first problem is to find out how much interest has actually accrued on the bond. In this case, it is two months' interest, or again \$8.33. Deducting this from the price of the bond gives \$1,141.67 (114.17 at 2 decimals). Looked at in another way, 114.17 and accrued interest is equivalent to 115 "flat." It then becomes necessary to determine the yield of a 20 year, 5 per cent bond selling at 114.17.

Segregation of income and principal of investments in estate accounting.—In handling bond accounts of trust estates, questions often arise as to the relative interests of the life tenants and the remainderman.⁸ Where funds are placed in

⁸ For a definition of these terms see p. 98, *infra*.

the form of a trust, from which the *income* goes to one party during his or her life, the principal going to the remainderman at the death of the life tenant, there are two distinct problems. The maximum income should be produced in the interest of the life tenant, yet the principal must be maintained intact. Where bonds are purchased at par at the beginning of the trust, there is no question as to what constitutes income and what principal. On the other hand, a bond purchased at a premium must be amortized, so that at maturity the par value plus the amortization will equal the original value. This is equivalent to saying that a part of the interest received from premium bonds must be put into a sinking fund before payment is made to the life tenant, the sinking fund equaling the amortization premium at the time the bond is paid.

Conversely, bonds purchased at a discount enjoy income from accumulation as well as from interest. Theoretically, the life tenant should receive the benefit of such accumulation. In practice, the segregation of income from principal is somewhat involved and is often neglected, or else the problem is met by the purchase of approximately an equal amount of premium and discount bonds.

Where income and principal are to be accurately segregated, however, it is desirable to use schedules of amortization and accumulation.⁹ The general principle involved may be stated as follows: "The cost of the bonds equals the principal or par value plus the premium, or minus the discount"; and, "The premium or discount of a bond, . . . bought above or below par, is the present worth of an annuity of the difference of the rates."

Premium bond.—To cover briefly the entire mathematical history of a loan, let us assume a 6 per cent, 4 year, semi-annual bond, issued February 1, 1927, and bought to yield $4\frac{1}{2}$ per cent.

On August 1, 1929, the value of the investment will be \$1,021.50. If the bond is to be sold at this date, this sum, at least, must be obtained if no loss in principal is to be suffered.

⁹ For a complete discussion of various schedules of amortization and accumulation the reader is referred to Sprague, Charles E., and Perrine, L. L., "The Accountancy of Investment," 1914, The Ronald Press, New York. See particularly Chapter XI.

<i>Date</i>	<i>Cash Interest</i>	<i>Net Income</i>	<i>Amorti- zation</i>	<i>Book Value (cost)</i>	<i>Par</i>
1927 Feb. 1				\$1,054.40	\$1,000.00
Aug. 1	\$30.00	\$23.70	\$6.30	1,048.10	
1928 Feb. 1	30.00	23.60	6.40	1,041.70	
Aug. 1	30.00	23.40	6.60	1,035.10	
1929 Feb. 1	30.00	23.30	6.70	1,028.40	
Aug. 1	30.00	23.10	6.90	1,021.50	
1930 Feb. 1	30.00	23.00	7.00	1,014.50	
Aug. 1	30.00	22.80	7.20	1,007.30	
1931 Feb. 1	30.00	22.70	7.30	1,000.00	

Following down the net income column, one notes the various amounts to which the life tenant is entitled, or which may be considered as true income. Thus, on August 1, 1927, of the \$30 coupon only \$23.70 may be used as income, the remaining \$6.30 being required to go to a sinking fund, which, with subsequent sums, will equal the premium at maturity. The life tenant, however, is entitled to interest on this fund, and it is necessary that the rate of interest thereon equal the yield on the bond if he is to receive a return equivalent to the yield at which the bond was purchased.

In this way, the person entitled to the fund at the death of the life tenant is protected by the amortization fund. At any interest date the book value, which is the investment, will, with the accumulated sums laid aside, equal the original capital.

Discount bonds.—Bonds purchased at a discount are treated in a similar fashion, except that the coupon rate *plus* the accumulation equals the true income. Thus, suppose a 3 per cent, 4 year, semiannual bond, was issued February 1, 1927, at a price to net $4\frac{1}{2}$ per cent. It is worth \$945.60 at the time of purchase and its history is as follows:

<i>Date</i>	<i>Cash Interest 3%</i>	<i>Net Income $4\frac{1}{2}\%$</i>	<i>Accum- ulation</i>	<i>Book Value</i>	<i>Par</i>
1927 Feb. 1				\$ 945.60	\$1,000.00
Aug. 1	\$15.00	\$21.30	\$6.30	951.90	
1928 Feb. 1	15.00	21.40	6.40	958.30	
Aug. 1	15.00	21.60	6.60	964.90	
1929 Feb. 1	15.00	21.70	6.70	971.60	
Aug. 1	15.00	21.90	6.90	978.50	
1930 Feb. 1	15.00	22.00	7.00	985.50	
Aug. 1	15.00	22.20	7.20	992.70	
1931 Feb. 1	15.00	22.30	7.30	1,000.00	

Stock dividends, recurring and special.—A similar problem, of course, arises in connection with stock dividends or dividends paid out as a distribution of assets—liquidating dividends, so to speak. In such cases, it is essential that the valuation of principal shall be kept intact, while all remaining income is paid to the life tenant. Let us illustrate this by a simple example. *A* died in 1920 and left \$500,000 of stock in corporation *X*, in a life trust for the benefit of *B*, after whose death the principal goes to *C*. The corporation pays regular dividends of 6 per cent from 1920 until 1925, at which time a 50 per cent dividend is declared out of surplus. The question is, "To how much of this is *A* entitled?" We will assume the following balance sheet for corporation *X* at the time of *A*'s death (1920), and in 1925:

1920			
Assets	\$4,000,000	Liabilities	\$1,500,000
		Capital	2,000,000
		Surplus	500,000
	<u>\$4,000,000</u>		<u>\$4,000,000</u>
1925			
Assets	\$7,500,000	Liabilities	\$4,250,000
		Capital	2,000,000
		Surplus	1,250,000
	<u>\$7,500,000</u>		<u>\$7,500,000</u>

From the above data it is seen that the \$500,000 of stock left in trust amounted to one fourth of the entire issue outstanding, and, therefore, was entitled to a quarter interest in the \$500,000 surplus carried on the books at that time. The book value of the stock, based on the 1920 balance sheet, was thus \$625,000, which must be kept intact for the remainderman. The payment of a 50 per cent cash dividend in 1925 would affect the balance sheet of the corporation in the following manner:

Assets	\$6,500,000	Liabilities	\$4,250,000
		Capital	2,000,000
		Surplus	250,000
	<u>\$6,500,000</u>		<u>\$6,500,000</u>

Such a payment reduces the book value of the \$500,000 of stock in the trust fund from an original value of \$625,000 to \$562,500. It is necessary, therefore, to retain \$62,500 of the \$250,000 cash due to the trust holding as a result of the dividend in the trust fund, otherwise there will result an impairment of principal.

The principle here involved is clearly set forth in an important New York case.¹⁰

1. Ordinary dividends, regardless of the time when the surplus out of which they are payable was accumulated, should be paid to the life beneficiary of the trust.

2. Extraordinary dividends, payable from the accumulated earnings of the Company, whether payable in cash or in stock, belong to the life beneficiary unless they encroach in whole or in part upon the capital of the trust fund as received from the testator or maker of the trust or invested in stock, in which case such extraordinary dividends should be returned to the trust fund or apportioned between the trust fund and the life beneficiary in such a way as to preserve the integrity of the trust fund.

Determination of stock yields.—The problem of determining stock yields is very much simpler than that of bond yields, for there is no return of principal, at least there is no promised date at which the principal comes due. In order to ascertain the yield on stock at any price, therefore, it is necessary only to divide the current dividend rate by the price at which the stock is selling. A stock that is selling at 90 and paying \$7 a year thus yields 7.7 per cent. At least, this is the so-called current yield. In the case of common stock, particularly, the dividend rate is not fixed as in the case of bonds, nor is it necessarily constant as in the case of many preferred stocks. The dividend rate on common stock fluctuates largely with earnings and may be varied at the discretion of the board of directors. In computing the yield on common stock, therefore, the result must be clearly thought of as a current and not as a fixed yield.

Mathematics of convertible securities.—Where a security carries with it the right of conversion into another security, it frequently becomes necessary to compute the ratio of conversion and to determine whether conversion is profitable.

¹⁰ In re Osborne, 209 N. Y. 450.

The various types of convertible issues have already been considered as well as some of the mathematics of conversion.¹¹ Where conversion is on a par for par basis, the operation is a relatively simple matter, for, when the price of the "conversion" security¹² is above that of the one that is convertible, conversion is profitable. Convertible securities may be said to have two values: the one a purely investment value; the other arising from the conversion privilege. The value of a convertible security will not go below its investment value, regardless of the value of the "conversion" security. On the other hand, the value of a convertible security may go substantially above its investment value, if the price of the conversion security so warrants.

The mathematics of conversion are somewhat more complicated when the conversion ratio is other than par for par. Let us assume that the bonds of corporation *A* are convertible into its common stock at 110. This means that bonds may be used to purchase the common stock of the corporation and that it takes \$110 *par value* of bonds to purchase \$100 *par value* of stock. The conversion ratio is not expressed in terms of market values, but market values determine whether conversion is profitable. Let us assume farther that the bonds have an independent investment value of 96. That is, as an investment without reference to the conversion privilege, they are worth 96. The stock, we will assume, is quoted at 105. Will the conversion privilege here raise the value of the bonds above their investment value? This can be answered by determining whether the stock can be purchased more cheaply with cash or with bonds at 96. Bonds of \$110 par value, worth $\$96 \times 110$, or \$105.60, will purchase \$105 worth of stock. It can hardly be said that the conversion privilege at this point has any effect on the price of the bonds, except that some investors may anticipate a rise in the price of the stock and bid up the bonds. Let us suppose that the price of the stock advances to 120. Will the bonds, valued on their conversion basis, be above or below their investment value? Bonds at \$110 *par value* equal stock at \$120 *market value*. The market

¹¹ See Chapter IX.

¹² Used to denote the security into which the convertible security may be converted.

value of the bonds must at least equal $\frac{120}{110}$, or 109.99, otherwise investors would purchase the bonds, convert them into stock, and sell the stock at 120, thus making a profit through such arbitrage operations. It is thus seen, in this latter case, that the conversion privilege has raised the price of the bonds above their investment value.¹³

The methods by which various companies handle conversion differ. Some companies charge the investor accumulated interest, or dividends, on the new security and credit accrued interest, or dividends, on the old. In other cases, no adjustment is made, the securities being exchanged on a "flat" basis.¹⁴ This may operate slightly to the disadvantage of the investor who converts, where interest has accrued on the convertible security, but not on the conversion issue. In such cases a further slight adjustment will appear in market prices, which will cause them to vary slightly from their true conversion values:

Subscription rights.—The mathematics of subscription rights have already been discussed at some length and need be reviewed only briefly at this point.¹⁵ It is the custom for corporations which increase their capital stock to allow present stockholders the first rights to subscribe thereto. In fact, this is generally required by law, otherwise it would be possible to disturb the relative distribution of the present equities in a corporation and to shift the control of the company through new stock issues. When stock is so offered, the present stockholders are allowed to subscribe to the new issue in proportion to their present holdings and on equal terms. Often the subscription price is below the current market price. Thus, let us assume that corporation A, with \$1,000,000 of capital stock outstanding, par \$100, decides to increase its stock to \$1,250,000. The current market for its stock is 130. The new stock, however, is offered to the stockholders at 100, in the proportion of one share of new stock for every four shares of old stock held. What is the value of the rights going with a share of old stock?

¹³ For further examples of convertible securities see Chapter IX.

¹⁴ Interest is included in the price.

¹⁵ See p. 245.

Let x = the required value,

P = the difference between market value and subscription price (in this case 30),

R = the percentage rate of increase (in this case 25 per cent),

$$\begin{aligned}\text{Then} \quad x &= \frac{P \times R}{R + 1} \quad \text{or} \quad \frac{30 \times .25}{.25 + 1} \\ &= \$6.\end{aligned}$$

Stock dividends.—The declaration of stock dividends gives rise to some minor questions of a mathematical nature, but need not cause confusion, if one regards them as a capitalization of surplus. The declaration of a stock dividend, *per se*, does not in any way affect the proportionate participation of the stockholder in the corporation, nor does the corporation thereby pay out any of its assets. In its simplest form, the changes in the accounts of a corporation resulting from the declaration of a stock dividend may be designated as follows:

BALANCE SHEET OF CORPORATION X

Assets	\$1,000,000	Common Stock par 100....	\$ 300,000
		Liabilities	400,000
		Surplus	300,000
	<hr/>		<hr/>
	\$1,000,000		\$1,000,000

Let us assume that the corporation elects to pay a 50 per cent stock dividend. This, of course, results in an increase in the capital stock item of \$150,000 and a decrease in surplus of a similar amount. In other words, the balance sheet will take the following form (after payment of the dividend):

Assets	\$1,000,000	Common Stock, par 100....	\$ 450,000
		Liabilities	400,000
		Surplus	150,000
	<hr/>		<hr/>
	\$1,000,000		\$1,000,000

If the dividend rate on the old stock is maintained for the new stock, or if the dividend rate is not reduced proportionately, an increased return results for the stockholder.

Otherwise, the position of the stockholder is not substantially different from what it was before the dividend, except that his proportionate equity is evidenced by a greater number of shares than before.

The declaration of a stock dividend may be anticipated by a rise in the price of the old shares of a corporation, but the mere fact that a split-up (as a stock dividend is sometimes called) takes place does not in itself affect the value of the equity represented by the stock of the company. Thus, if the market value of the stock of corporation *X* was \$200 a share before the declaration of the previously assumed 50 per cent dividend, it would sell ex dividend at \$133.33 a share. That is, one and a half new shares equals the value of one old share.

Strictly speaking, a stock split-up, as contrasted with a stock dividend, means increasing the number of shares of stock outstanding and either decreasing the par value thereof, or changing the stock into no par value stock. In the present case, for example, the corporation might have changed the stock into 18,000 shares of no par stock and given 4 shares of new for each share of old. In this case the new stock would have had a market value at the time of split-up of \$50 a share. If one assumes farther that the old dividend rate was \$10 a share and that the rate on the new stock is to be \$3 a share, the result would be equivalent to an increase of \$2 a share on the old stock.

The student may ask, "Why is it necessary to go to all the trouble of declaring stock dividends?" To be sure, the same results may be effected by changing the dividend rate on the old stock. Yet the effect of a stock split-up is to lower the unit price per share of stock. A wider market is created for stock selling at \$50 a share than for stock selling at \$200 a share. There are more buyers for 4 or 5 shares of stock at \$50 than for 1 share of stock at \$200 or \$250 a share. In this way, at least, there is an indirect relation between the declaration of stock dividends and the market value of the stock of a company.¹⁶

Dividends may be declared in scrip or even in the bonds

¹⁶ Other reasons for the declaration of stock dividends involve questions of taxation, a desire to reduce the current dividend rate on stock in order to distract attention from large earnings, or the desire to capitalize surplus.

of a corporation. Where the dividend is in the form of an obligation of the company, the result is essentially that of declaring a deferred cash dividend. Surplus or earnings must be debited, and the bond account credited, for the amount of the dividend, instead of cash. The same results might have been obtained so far as the corporation is concerned, if it had borrowed the money and paid a cash dividend.

CHAPTER XXVIII

THE MECHANICS OF INVESTMENTS

Purchase and sale of stocks—types of houses.—Stocks may be purchased from brokers who are members of some stock exchange, from nonmember brokers, or from investment banking houses. Strictly speaking, the broker, whether a member of a particular exchange or not, does not maintain a position in securities. That is, he does not own securities himself, but buys and sells on a commission basis. The investment house, in contrast, owns certain securities which it offers for sale at stated prices in the same way that a retail or a wholesale merchant offers his wares for sale. Despite this theoretical distinction, however, some investment houses execute orders, usually through a correspondent brokerage firm, while some brokers buy and sell stocks on their own account.

Commissions.—From the investor's standpoint, the difference between purchasing securities on a brokerage basis or purchasing from a house that owns them outright relates largely to the matter of commissions. If an order is placed with a broker to purchase stocks or bonds in the open market, the total charge will include not only the price of the securities but a commission as well. Brokers operating on exchanges charge standard commissions for buying and selling. On the New York Stock Exchange the charges on stock transactions are as follows:

		<i>Per 100 Shares</i>
Stocks selling: below	\$10	\$7.50
at	\$10 and under \$25	12.50
at	25 and under 50	15.00
at	50 and under 75	17.50
at	75 and under 100	20.00
at	100 and under 200	25.00

On stocks selling at \$200 a share and over, 25 cents a share for the first \$200 in price and 5 cents per share additional for

each \$50 increase in price, or fraction thereof. The minimum commission on an individual transaction in stock is \$1.¹

Stocks sold on a net basis.—In the case of stocks which are purchased or sold for the account of the house, whether it does a brokerage or a banking business, a net price is ordinarily made to the customer which includes all commissions. Thus, in the case of unlisted stocks, which are traded in by houses that specialize in their purchase and sale, the market is established by bid and offer prices. Such houses offer stock for sale at one price and offer to purchase it at another. This spread may be as high as 5 or 10 points for inactive stocks, whereas, for actively traded in stocks, the market is much narrower.

Transfer taxes.—There is a Federal stamp tax on original issues of stock amounting to 5 cents for each \$100 of par value, or fraction thereof, of stock, and 2 cents a share on each transfer thereafter. In the case of no par stock the original tax is 5 cents a share at the time of issue and 2 cents a share on transfers. This transfer tax must be paid by the seller. Accordingly, in the case of brokerage transactions, the seller has deducted from the proceeds of the sale not only the broker's commission, but the tax as well. In the case of outright purchases the purchasing house may or may not agree to pay the transfer tax.

In addition to the Federal transfer tax, a state tax is imposed on the sale of securities in Massachusetts, New York, and Pennsylvania. This tax is imposed on the sale, agreements to sell, memoranda of sale, or transfer of all stock, and amounts to 2 cents on each \$100 of face value, or fraction thereof, and 2 cents a share on stock without par value. These taxes are likewise payable by the seller and must be paid whether the transfer of stock is made on the books of the company, by assignment in blank, by delivery, or by any paper transferring the beneficial or legal title, or merely the possession of the stock or certificate, although agreements evidencing the deposit of securities as collateral for loans are exempt.

¹ In addition to the commission, purchasers or sellers of listed stocks in less than 100 share lots are charged from $\frac{1}{8}$ to $\frac{1}{4}$ of a point above the last actual sale price. This goes to the odd-lot specialist. The trading unit on the larger exchanges is 100 shares.

Transfer of stock.—Stock certificates are negotiable instruments. Each certificate is made out in the name of the owner who subsequently can transfer title either by indorsing the certificate to a specific party, by blank indorsement, or by executing a power of attorney which authorizes some one else, usually a bank or a broker, to transfer the stock.

On the face of each certificate of stock will appear the serial number, the total amount of the issue, the number of shares represented by the certificate, proper signatures by the officers of the company, and the necessary authentication by the registrar and transfer agent. On the back of the certificate there appears a blank form of power of attorney with bill of sale and power of substitution. This appears usually as follows:

For value received hereby sell, assign, and transfer unto shares of the capital stock represented by the within certificate and do hereby irrevocably constitute and appoint attorney to transfer the said stock on the books of the within named company with full power of substitution in the premises.

Dated 19..

In the presence of

NOTICE. The signature to this assignment must correspond with the name as written on the face of this certificate in every particular without alteration or enlargement, or any change whatever.

Corporations customarily maintain three books in connection with stock transfers. A certificate book is kept which is similar in some ways to an ordinary check book. This book contains a series of certificates and stubs. When a new certificate is issued, the name of the owner, as well as that of the former owner in case of transfers, the date of issue, and the number of shares are all entered on the stub. When the certificate is returned to the company for transfer, it is marked canceled and reattached to the original stub. Then a stock record book is kept for the purpose of recording all transfers and issues, as well as a third book in which is contained a list of all the stockholders of the corporation and their individual holdings.

When a stockholder wishes to transfer his stock, he either indorses it in blank or indicates the name of the transferee on the certificate. It is often preferable to indorse to a specific

person, otherwise the certificate may be lost or stolen and reach an innocent purchaser for value whose title is valid. The old certificate, upon being received by the company with instructions to issue a new certificate in the name of another holder, is canceled and the company makes the necessary changes in its records. The new certificate must be authenticated by the transfer agent and registrar who are independent of the corporation.

Uniform stock transfer law.—A uniform stock transfer law has been enacted in Massachusetts, Pennsylvania, and New York, the essential provisions of which may be briefly outlined. Title to securities may be transferred by the delivery of certificates when indorsed in blank or attached to a written assignment. When instructions are given as to the new holder, a new certificate in his or her name is required. If the indorsement was secured by fraud or duress, or if delivery was made without authority of the owner, the transfer may be declared void in case the certificate does not come into the possession of a third party for consideration who is ignorant of any illegality. Lack of consideration does not invalidate an indorsement. Every person who transfers a certificate for value warrants (a) the genuineness of the certificate, (b) his legal right to transfer it, and (c) that he has no knowledge of any defect in the validity of the certificate. The transfer laws of other states are generally similar to the uniform law just mentioned.

Orders to buy and to sell.—There are a number of different ways in which orders may be given to buy and to sell stocks. We shall briefly describe some of the more important.

The simplest type of order is known as a market order. Here the buyer or the seller gives his broker an order to buy or to sell a definite number of shares of stock "at the market." On such an order, the broker buys or sells the stock immediately. In the interests of his customer, however, the broker must carry out the order at the best possible bid or offer on the market. In the case of actively quoted stocks a market order is generally, although not necessarily, executed close to the last sale previous to the entering of the order.

Another type of order carries with it a stated price. Thus, an order may be given to a broker to purchase or to sell a certain number of shares of stock at a specified price. Such an order may be for a stated time or good until canceled.

Where the price is specified, the broker works on the order as long as it is in force and attempts to get the specified price. He may get the stock at a lower price, or he may sell it at a higher price, for this is in the interest of his client; but he may not execute it on less favorable terms than those specified.

Stop-loss orders are often given to protect a speculative position in stocks. Let us assume that a speculator has purchased 100 shares of Steel Common at 158 and wishes to limit his loss to 5 points. He may enter an order to "sell stop" at 153. The broker then acts only if and when the stock declines to 153, at which time he proceeds to execute the order at a price as near to 153 as possible. Similarly, when a speculator is operating on the short side of the market, he may enter an order to "buy stop" at a price somewhat above the current market. Thus, assume that the individual in our example had sold 100 shares of Steel Common at 158 and desired to limit his loss to 5 points. He would then enter an order to "buy stop" at 163, and the broker would execute this order at the most favorable price possible after the stock reaches 163.

Discretionary orders are blanket orders placed with the broker to buy or to sell stock whenever he considers the time advantageous. For obvious reasons, such orders are not customarily accepted by reputable brokers.

The period during which an order remains in force is specified when it is given. An order may be "good for the day," "good for the week," or for any other specified time, or it may be good until canceled. It is customary to make automatic adjustments in order to account for dividends. If the quarterly dividend on a given stock is \$1 a share, it will sell ex dividend \$1 lower than the previous close. Thus, if a broker has an order to buy 100 shares of such a stock at \$50, ordinarily, he will lower this price to \$49 the day it sells ex dividend and so notify his customer.

Selling short.—When an individual sells stock which he does not own he is said to "sell short." It may seem odd to sell something not owned, but it must be remembered that any speculative transaction, that is, a transaction in which the main consideration is enhancement of principal and not income, consists of two parts: a purchase, and a sale. In a short sale, the order is reversed to a sale and a purchase. Thus *A* may go into a broker's office and enter an order to sell 100 shares of

steel "short" at the market. The broker proceeds to do this and, we will assume, sells the stock at 150. It is necessary, however, for the broker to make an actual delivery of this stock to the purchaser before the close of business on the following day.² *A's* broker, therefore, must borrow the stock from some one who has the stock to lend. There is a group of brokers on the exchange who specialize in lending stocks, for the consummation of short sales.

Loans of stock.—When stock is lent in this way the lender insists that the borrowing broker lend him an amount of money equal to the market value of the stock. If the stock is plentiful for lending purposes, the broker who lends the stock but borrows the money will be required to pay the current rate of interest on this loan. If, however, there is a scarcity of stock then the rate of interest declines. In fact, it may go to zero, in which case the lending rate is "flat." In times of extreme scarcity the broker who lends the stock may get the loan of money at a cash premium. That is, in addition to being favored with the loan at no interest, he may receive a cash premium from the borrower of the stock. The client who originally went short, however, has to pay for this, and, furthermore, is required to pay the amount of any dividends declared while he is short of the stock.

Margin transactions.—In cases where stock is sold short, as just described, the broker, of course, will require some protection against the possible inability of *A* to consummate the transaction. For example, let us assume that the price of U. S. Steel advances to \$200 a share before *A* covers (that is, buys in). If the broker had nothing in the way of security, he would stand to lose the difference between 150 and the market price of the stock, plus any additional charges, such as dividends and interest, if *A* went bankrupt during the interim. For this reason, the broker will require *A* to put up, not necessarily the entire value of the stock, but a margin equal, we will say, to 25 per cent of its value. If *A* then goes

² There are several different types of delivery. Where a cash sale is made, the stock must be delivered by the seller to the buyer on the day of the sale. Where sale is for regular delivery, delivery must be made before the close of business on the following day. Stock may also be sold for 3-day delivery, or at the buyer's or the seller's option. In the latter transaction, such option is not for less than 40 nor more than 60 days from the day of the contract.

bankrupt the broker can use this margin deposit, plus what he originally received when he sold the stock, to purchase stock with which to pay back the 100 shares borrowed at the time of the sale. If A was required to put up a 25 per cent margin at the time of the sale, his requirements would have been \$37.50 a share or \$3,750 in all. If the stock later advanced to \$200 a share, the original margin requirement would be insufficient. The broker, therefore, would have required additional margin long before the stock reached 200. If A had failed to meet this call he would have been closed out. That is, when the stock had advanced, say, to 175 the broker would probably have called for more margin. Had this not been forthcoming, he would have purchased the stock and returned to the customer the amount due. Exclusive of commissions, interest, dividends, and transfer taxes this would have equaled \$12.50 a share. On the other hand, if the stock declines in price, the short seller can complete his transaction by purchasing and make a profit thereby.

Stock may also be purchased on a margin. Let us assume that A wished to purchase 100 shares of a stock selling at \$100 a share on a margin instead of selling short as in the previous case. We will also assume that the broker insists on at least a 25 per cent margin. This is equivalent to \$2,500. The broker purchases the stock and lends A \$7,500 with which to carry the entire 100 shares. The broker, of course, holds A 's certificate and also charges him interest on the loan. A , however, is entitled to all dividends on the stock. Furthermore, if the price should rise to \$120 a share, A may sell and retain all of the \$20 a share profit, or, if the stock declines to 90, the loss is likewise entirely suffered by A . The broker gets the money which he lends to A by borrowing at his bank on a time note or by borrowing in the call loan market "on call."³ The rate of interest charged by the broker to his customer will be fractionally higher than that which he is required to pay.

³ Money borrowed "on call" must be paid back when demanded by the lender. Call loans are always secured, usually by the deposit of stocks and bonds. It is customary in the New York call loan market to renew call loans from day to day at the call loan rate for the day. Call money fluctuates from day to day in sympathy with the demand for and supply thereof.

Margin requirements.—Whereas the margin requirements of brokers vary, the following limits apply generally to securities listed on the New York Stock Exchange:

Shares selling: under \$10 must be paid for in full.	
from \$10 to \$20.....	50 per cent
from 20 to 60.....	10 points (dollars a share)
from 60 to 90.....	15 points (dollars a share)
from 90 to 110.....	20 points (dollars a share)
from 110 to 125.....	25 points (dollars a share)

These requirements vary, of course, with the particular stock carried. There are no set rules adopted by the exchange, each member making his own schedules. With securities which fluctuate widely in value, larger margins are often required. The broker, if he is doing a conservative business, wishes to protect both himself and his client. It is not considered good business practice to encourage purchases by customers who are not properly protected during unusual declines.

Collateral for bank loans, use of securities as.—In other cases, investors prefer to have the stock transferred to their name, and use it as collateral for a bank loan rather than to operate on a margin basis. Banks will lend between 50 and 75 per cent of the value of most active stocks. It is often possible for the investor to get a lower rate of interest in this way than that charged by a broker. Where the bank receives stock indorsed in blank, as collateral, no additional papers are necessary. Where the stock is in the name of the borrower, a power of attorney, properly made out, is given to the bank.

Purchase and sale of bonds; registered and coupon bonds.—Bonds as well as stocks are negotiable instruments. Coupon bonds, however, are different from stocks, in that they are payable to bearer, which means that title passes by delivery. Delivery of the bond thus constitutes full transfer. In the case of registered bonds, however, the question of transfer is not unlike that of stocks. Registered bonds are payable only to the party whose name appears on the bond, and, in order to transfer title, the bond must be properly indorsed and returned to the company, which then issues another bond in the name of the new owner. The inconvenience attached to registered bonds causes them to sell at a slightly lower price than coupon bonds, although this differential rarely exceeds one fourth of a point.

In the case of coupon bonds, payment of interest is made upon presentation of the proper coupon. Similarly, the principal is paid upon presentation of the bond itself. The holder of a fully registered bond receives both interest and principal in the form of a check. If the bond is registered as to principal only, then interest is paid upon presentation of coupons, while principal is paid to the registered holder by means of check.

Accrued interest.—Practically all bonds are quoted and sold “and interest.”⁴ This means that the total cost of the bond includes both the agreed price and the accumulated interest. This is proper, since the owner of the bond is entitled to interest on his security so long as he holds it, whereas the new owner’s interest should begin at the day of purchase. Regardless of the current rate of interest, or the yield basis on which the bond is sold, it is customary to figure accrued interest on the basis of the coupon rate of interest which the bond bears.⁵

Commission on bond sales.—In the case of unlisted bonds, transactions are usually “net,” that is, the price includes all commissions. The reason for this is the fact that unlisted bonds are usually bought and sold by houses that act as dealers rather than as agents or brokers. In the case of bonds listed on the New York Stock Exchange the following rates are charged:

<i>Class</i>	<i>Commission per \$1,000 Bond</i>
Rails, Utilities, and Industrials:	
Long Term (over five years).....	\$1.50
Short Term (within five years).....	1.25
Minimum Charge per Transaction.....	1.00
Government, State, and Municipals.....	62½ cents

The New York Stock Exchange.—No discussion of the subject of investment would be complete without some reference to the New York Stock Exchange. This organization occupies a position of unique importance in the field of finance, although only a relatively small proportion of actual sales of securities are made within its jurisdiction.

⁴ Bonds in default and income bonds are generally sold “flat,” that is, the quotation includes any accumulated interest.

⁵ The computations involved in determining accrued interest are discussed on p. 735.

Membership and organization.—The New York Stock Exchange is an unincorporated organization, limited to 1,100 members. Membership is termed a "seat," and gives the owner the privilege of transacting business on the floor of the Exchange. The objects of the Exchange are "to furnish exchange rooms and other facilities for the convenient transaction of their business by members, as brokers; to maintain high standards of commercial honor and integrity among its members; and to promote and inculcate just and equitable principles of trade and business."

Members may act as either brokers or traders, or both. As brokers they execute, for their clients, orders to buy or to sell securities on the floor of the Exchange. As traders, they buy and sell securities on the floor of the Exchange for their own account.

We need not go into detail regarding the organization of the Exchange. As a matter of practice, the Governing Committee is vested with absolute power over its members. This Committee has power to suspend or to expel any member for violations of the constitution, or for unjust or inequitable conduct in connection with trading, or for any acts which may be detrimental to the Exchange. The Governing Board has always insisted on a high standard of business conduct, and members may be disciplined for offenses against the rules of the Exchange even though no civil statutes are violated.

The Exchange, through its rules and constitution, aims to safeguard the interests of the public in dealings with members and to hold members to the highest standards of business ethics. Contracts made on the floor of the Exchange are inviolate and must stand unless both parties agree to a modification of terms.

Listing securities, requirements for.—Only stocks that are listed may be traded in on the Exchange. When a corporation wishes to have its securities listed, it must make a formal application which is passed on by the committee on stock list. The listing fee is \$100 for each \$1,000,000, or part thereof, of each class of securities to be listed. For stock without par value the fee is \$100 for each 10,000 shares. Upon making such formal application the corporation is given three documents to be filled out: a list of requirements to be met; a distribution statement; and a questionnaire.

We shall not consider the rather technical detail that is involved in these documents, nor shall we undertake an examination of all the requirements that must be met.⁶ In a general way, it may be said that complete information is required concerning the nature of the corporation, its product, its history, its management, its places of doing business, its capitalization, and so forth. The latest available balance sheet and income account of the corporation, together with a complete financial history, is likewise required. A statement of the purpose of the issue to be listed must be furnished, as well as copies of the corporation charter and by-laws, and certain legal papers certifying the legality of the issue about to be listed. The Exchange likewise exercises strict supervision over the form and the manner in which all securities shall be engraved and requires that all corporations making application for listing their securities agree to maintain a transfer office or agency in the Borough of Manhattan, City of New York, where all listed securities shall be directly transferable, and principal, interest, and dividends thereon payable. A registrar must likewise be maintained other than the transfer office or agency where all listed securities shall be registered.

Once a corporation's securities are listed, in all or in part, the Exchange requires it to publish at least once a year, fifteen days in advance of the annual stockholders' meeting, a statement of its physical and financial condition, an income account covering the previous fiscal year, and a balance sheet showing assets and liabilities at the end of the year; also an annual income account and balance sheet of all constituent subsidiaries, owned or controlled, or a consolidated income account and a balance sheet must be furnished. The Exchange further requires that adequate notice be given of rights or subscription privileges, actions regarding dividends, and interest. In fact, adequate notice is required of all acts that affect the interests of the holders of the listed securities.

One of the essential functions of the Exchange is to facilitate trading in securities. To this end, securities with a narrow or restricted market are not acceptable. And, similarly, "cor-

⁶ A more complete discussion of listing requirements may be found in Meeker, J. E., "The Work of the Stock Exchange," p. 446 ff., 1922, Ronald Press, New York. See also Huebner, S. S., "The Stock Market," Chapter IX, 1922, Appleton & Co., New York.

ners" are regarded as highly detrimental to free trading. Accordingly, when it appears that the distribution of a stock is such as unduly to restrict trading it may be stricken from the list, or trading therein may be suspended.⁷

The listing of a security, generally speaking, gives it a wider market than it would otherwise enjoy. The fact that active trading takes place in most listed securities also makes it possible for the holder of such securities to obtain accurate information regarding the market value of his holdings from day to day. This is made available through current quotations on actual sales. Listing is also a guaranty that the issue is bona fide, and has behind it a going concern. Likewise, the publicity that is assured the owners of listed securities is helpful. The fact that usually there is a wide market on listed securities, as well as complete data relative to their market price, adds to their collateral value. Banks do not accept pledged securities as investments, but rather as assets to be disposed of if the loan is not repaid. The ease with which the collateral may be converted into cash, therefore, rather than its inherent investment value, is the governing consideration in determining how much will be lent on a given stock or bond. Outside these advantages there is little difference between listed and unlisted securities. The mere fact that a security is listed is no guaranty of value.

Ticker service recording sales of stocks and bonds.—All transactions in stocks and bonds on the New York Stock Exchange are given immediate publicity by means of the ticker. There are, in fact, two services, a bond ticker and a stock ticker. Prices are immediately recorded on ticker machines and duplicated in brokerage offices throughout the United States. Prices recorded on the tape, as it is called, are records of actual transactions that occur on the Exchange.

Other exchanges.—The New York Curb Exchange is an organization of lesser importance than the Stock Exchange, although somewhat similarly organized. It also functions in much the same way as the New York Stock Exchange. Mem-

⁷ Stock is said to be "cornered," when a large part of the floating supply is acquired by an individual or group who may thus control its price. Those who are short of a stock in this position are at the mercy of those who have cornered the stock and must cover their sales at whatever price is asked. In the case of "cornered" stock the regular rules of delivery may be suspended.

bership is limited, dues are payable, stocks and bonds are listed, and buying and selling orders are executed, although the stocks there listed are often new issues, or issues that cannot meet the New York Stock Exchange listing requirements.⁸ There are also organized stock exchanges in other cities, among the more important of which are the Boston Stock Exchange, the Chicago Stock Exchange, and the Philadelphia Stock Exchange. Trading on these exchanges, however, is dominated by the state of trading on the New York Exchange.

The investment banker, functions of.—There is a wide distinction between the work of a stock exchange house, which does a strict brokerage or commission business, and the investment banker. The former operates strictly on a commission basis and will execute any order accompanied by proper assurances that the client can meet his obligations. He assumes no responsibility as to the outcome of his client's operations. He simply stands ready to execute orders.

The investment banker, on the other hand, is a merchandiser in securities. He is different in this respect, also, from the commercial banker who deals in short term paper. Although investment bankers may be classified as wholesale and retail, according to the size of the business they do, their essential functions are generally similar and may be discussed under four headings: purchasing; selling; protective; and advisory.

Purchasing function.—When a corporation desires funds for long term financing, it approaches an investment banking house and states its requirements. Negotiations are then entered into which result either in the banking house purchasing or rejecting the issue. New concerns often shop around with their proposition until they get the most favorable terms; but, once a connection is established, usually it is maintained. In this respect, custom differs from that found in municipal financing, where the award is made at a public sale to the highest bidder. The practice of continuing relationships with one house has recently been a subject of criticism, particularly in the railroad field, on the grounds that competition between bankers for new issues should give the company a better price. As opposed to this argument, however, is the practical one that

⁸ But not necessarily so. Consider, for example, the appearance of many of the Standard Oil issues on the Curb. Generally, however, securities traded in on the Curb are less widely known.

long continued relations with a single banking house are desirable. Experience with successive issues familiarizes the banker with the affairs of the concern. As a result, he can more intelligently guide the corporation's financial policies. Likewise, in times of emergency, the banker feels a certain responsibility for those houses with which it has had continued relations.

Prior to the purchase of an issue, the banking house customarily makes an exhaustive investigation. The first step in this process is the preliminary investigation which covers only the financial statements and general history of the company. If this survey shows a proposition of real merit, then a more exhaustive examination is made of the plant and internal affairs of the corporation. At this stage, appraisers are engaged to determine the value of buildings, equipment, and inventories. Auditors are employed to check up on financial records and accounting practices. Engineers study production and marketing policies, and attorneys investigate franchises, leases, and contracts. Each specialist reports back the results of his investigation. The next step is a conference, at which the nature of the security, the interest rate, the maturity dates, and the purchase price are settled. The banker, throughout, always considers the possibility of a resale to the investing public. His reaction during the investigation and conferences, therefore, centers on whether the proposition can or cannot be sold. In view of the narrow margin that generally exists between the purchase and the sale price of the better grade issues, it is important for him to determine in advance the reaction of the public to the issue.

Selling function.—Once an issue has been purchased, the next function is to distribute it to the investing public. In case of large issues, the originating firm will invite other houses to join in underwriting a part of the entire amount. In the case of smaller issues the purchasing house undertakes the entire distribution, although it offers certain concessions to other dealers, who, in turn, retail the securities so purchased to their clients. The selling function is pursued vigorously by the investment banker once an issue is purchased. Descriptive circulars are prepared and mailed to a wide list of prospects; advertisements are inserted in financial publications; and customers are approached by the bond salesmen of the house. In fact, to-day

the distribution of new securities is a merchandising problem that is often solved by the application of high powered salesmanship.

To this end investment banking houses require salesmen of a high order. Indeed, many houses develop and train their own bond salesmen. Recruits are carefully selected, often from the graduating classes of universities. During the early stages of training these recruits are put to work at various minor positions in the firm, such as running errands, assisting in statistical and accounting work, and attending classes and lectures. Later, they will be assigned a list of prospects on which to call, possibly in the company of an older man. Finally, the initiates are put on their own feet. A nominal salary is usually paid during the preliminary period. Subsequently, remuneration may be entirely on a commission basis, or on a salary and a commission basis.

Protective functions.—The investment banker has been referred to as the watch dog of our capital resources. The inability of the ordinary investor to discriminate between good and poor investments has placed a real responsibility on the investment banker. His most important function is to keep his clients out of poor securities. However, since no one is infallible, mistakes are bound to be made even by the best investment bankers. Some issues, regardless of how carefully they were originally investigated, turn out poorly. When this occurs the originating house, in a way, is responsible and is generally expected to play a leading part in the organization of protective committees and the work of reorganization. The originating house is likewise expected to maintain the offering price of an issue until it is fully distributed and thereafter to create a market. This it does by establishing a "bid and ask" price. By this is meant that the house agrees to buy at one price and to sell at another. There is a normal spread in active unlisted securities of from one half to one point. In inactive issues the spread will vary from one to ten points, and even more in exceptional cases. It is this spread that furnishes the banker a profit on trading activities.

Advisory functions.—The investment banker also undertakes to perform advisory services for his clients. Many houses offer the use of their statistical departments for the purpose of answering inquiries of clients. An attempt is often

made to advise clients as to the proper distribution of their holdings or on matters of taxation, to notify customers when bonds are called, and to advise when shifts should be made from one commitment to another. Some houses go so far as to maintain lists of customers' securities and to render thereon periodic reports.

Sources of investment information.—Two of the most important daily publications which deal strictly with investment news are the *Wall Street Journal* and the *Boston News Bureau*. The former paper is published by the Dow-Jones Company, the latter by C. W. Barron. There is a community of interest between both papers. In addition to complete market reports covering daily prices and sales of listed and unlisted securities, they also contain a very wide range of financial news. Of distinct value to the investor are the quarterly, semiannual, and annual reports of earnings of the more important corporations. Such reports are published in these papers immediately upon being available. In the case of the larger corporations these reports are accompanied by excellent editorial analyses.

Current banking statistics, information regarding new issues, money rates, and similar data are included, together with frequent editorial comment. Political activities, in so far as they are related to finance, are reported. The Dow-Jones averages of twenty rails and twenty industrials appear first in these publications. The *Boston News Bureau* is an evening publication, whereas the *Wall Street Journal* appears in the morning. The former publication, while it has much news of a national character, is more strictly devoted to affairs of the Boston markets.

Of the more general newspapers the *New York Times* undoubtedly has the most complete financial section. Its reporting service is excellent and its editorial analyses are conservative and accurate. The *New York Sun*, the *New York Evening Post*, the *New York Herald-Tribune*, among other metropolitan dailies, offer very complete financial news.

Weekly publications.—The *Commercial and Financial Chronicle*, commonly referred to as the *Chronicle*, is the most complete exclusively financial organ. It would indeed be difficult to describe in detail the amazing scope of this publication. Practically all important current financial statistics, including a very wide range of corporate reports, are here given. The

editorial work of the paper is very complete also. In addition to the weekly publication, there appears the monthly Railways Earning section, in which are reported monthly earnings of all Class I railroads. The Monthly Bond and Quotation section offers quotations on a very extensive range of listed and unlisted securities. The Semiannual State and Municipal Compendium gives complete information regarding United States bonds, state debts and resources, debt limitations, savings bank laws, municipal financial data, including resources, debts, and taxes. The Railway and Industrial section, issued semiannually, contains the latest reports of earnings, descriptions of bond issues, dividend payments, maps of railroads, and other pertinent data. The Public Utility Compendium, also published semiannually, contains similar data for telephone and telegraph companies (United States and foreign), gas and water companies, and power, light, and railway companies.

The *Bond Buyer* is an excellent weekly paper, which deals very largely with municipal issues. The *Annalist* is also a weekly publication, which not only gives a wide range of statistical material but deals also with matters of general financial interest. In addition to an excellent reporting service, the *Annalist* contains illuminating articles which discuss topics of interest to the investor. The *Financial World* (weekly), *Commerce and Finance* (weekly), *Barrons* (weekly), *Dun's Review* and *Bradstreet's Review* (both weekly), *Forbes Magazine*, and the *Magazine of Wall Street* (semimonthly), all contain interesting information concerning investments.

Investment services.—The Standard Statistics Company furnishes a very complete financial service. The two features of this service of most importance to the investor are the Standard Bond Descriptions and the Standard Corporation Record (stock) Service.

The bond service consists of two parts, the most important of which is the one containing bond descriptions. Each important bond issue has a separate card containing a résumé of the pertinent features of the issue. An auxiliary loose leaf service provides information regarding the less important issues. Current information on bond issues, as well as data on sinking fund operations, redemption, defaults, and current underwritings, are likewise furnished.

The stock service, similar in form to the bond service, in-

cludes a card file for important companies. Less important companies are referred to in the standard corporation records, which consist of loose leaf files. For each company included in the card file there is a report card and a bulletin. In some cases, a third card is furnished, analyzing the funded debt of the corporation. The report card presents the current income account and balance sheet for the corporation, as well as reports for past years. In many cases a ten-year analysis is given. The bulletin contains the most recent available information and a résumé of the position and prospect of the company. Cards and corporation records sheets are kept up to date by means of daily news sheets. Information regarding unlisted and local securities and a daily and weekly dividend sheet are also contained in the news section.

Other services furnished by the Standard Statistics Company include: (1) the Trade and Securities Service, consisting of (a) business prospects, (b) special supplements, (c) earnings bulletin, (d) statistical bulletin, (e) sales, (f) credit prospects, and (g) analyses by industries; (2) Standard Facts and Forecasts, which consist of a running analysis of the market, as well as up-to-date analyses of particular companies; (3) Standard Service on Railways; and (4) Standard Bond Investment Service.

Moody's analyses of investments.—This service is one of the older investment services and is widely used by investors. It is published by Moody's Investors' Service, 35 Nassau Street, New York. The most widely known part of the service consists of the "Manuals of Ratings," published in four volumes: "Government Section"; "Industrial Section"; "Public Utility Section"; and "Railroad Section." The rating books are published annually and contain not only analyses of the financial statements of an extensive list of corporations and full information regarding the terms of their various securities, but also definite ratings on each security. These ratings extend from Aaa, which is the highest, to D, which is the lowest. The system of ratings is explained in the first part of each volume.

In addition to the volume just referred to, the company also renders as a part of its complete service regular bulletins, correspondence, and consultation privileges. The rating service is kept up to date by monthly supplements to the "Manuals."

Poor's Service.—Poor's Publishing Service, 33 Broadway, New York City, is a combination of the former Moody Manual Company and Poor's Railroad Manual Company. The complete service furnished by this company includes the "Manuals" (one volume devoted to steam railroads, one to public utilities, two to industrials, and a government and municipal supplement), Poor's *Daily Digest Service*, Poor's *Quotation Register*, and Poor's *Ratings*.

The "Manuals" are published annually and contain excellent historical and financial reports of a wide range of securities, listed and unlisted.

The *Daily Digest Service* consists of daily news items concerning a wide range of corporations. All information contained in the daily sheets appears later in the cumulative bulletins which are published in semiweekly, monthly, and semi-annual form. There is also included a complete dividend and called-bond service.

Poor's *Quotation Register* contains the high and the low prices of over 9,000 securities, in many cases running back to 1913.

Poor's *Ratings* are published semiannually. Companies are arranged alphabetically and the securities of the company are listed under its name. The column immediately opposite gives the rating of the security, while the following column gives a separate rating for the salability of the issue. These books are published every January and July and are kept up to date by monthly cumulative supplements. The order of rating is indicated by the following symbols: A***, A**, A*, A, B**, B*, B, C**, C*, C, and so on.

Fitch services.—The Fitch Publishing Company, Incorporated, is located at 138 Pearl Street, New York. The services of this company include: (1) *The Fitch Bond Book*, in which are contained statistical descriptions of railroad, public utility, industrial, and foreign government bonds. Each bond is rated according to the Fitch system, which comprises four principal groups: A, B, C, D. Each group has three subdivisions, such as AAA, AA, A, indicating the position of the bond within the group. *Fitch Bond Revisions* are issued weekly in order to keep ratings up to date. (2) *The Fitch Bond Record*, issued weekly, which gives the price range from 1906 to date, the Federal tax status, denominations, weekly sales, interest rates,

dates and maturity, call price, current bid and ask prices, last sale, and yield at last sale, for all bonds listed on the New York Stock Exchange. Issues legal for savings banks in New York state are so indicated. (3) *The Fitch Issue Service*, which gives a brief description of all issues outstanding to the amount of \$1,000,000 or more (municipals \$500,000 and over). This is issued in loose leaf pocket size. (4) *Fitch Listings of Investment Bankers and Brokers*, throughout the United States and Canada. (5) *The Fitch Stock Record*, which gives weekly quotations and income values of most of the active railroad and industrial stocks listed on the New York Stock Exchange.

White and Kemble Atlas and Digest of Railroad Mortgages.—This digest contains a separate map for each of the more important American railroads, on which are shown the route of the railway, and the various mortgage liens on the different sections of the road. Successive mortgages are indicated by colored symbols. Each mortgage is assigned a number on the map and in the accompanying digest are given the principal features of the mortgage.

Special.—In special fields of finance there are publications of a more restricted nature. Thus the "Mines Handbook" is a yearly manual of the mining industry of the world. Statistics are given showing the production of principal metals, reports on individual companies, and a list of obsolete mining securities. Best's "Insurance Reports" contain excellent financial data on insurance companies. The *Railway Age*, the *Electric Railway Journal*, the *Petroleum Age*, the *Iron Age*, and the *Electrical World* each contain valuable investment information for the industry represented. "The Annual Report of the Council of Foreign Bondholders," issued by the Corporation of Foreign Bondholders, London, England, contains excellent information concerning foreign issues. See Classified bibliography, section headed, "Investment Manuals, Services, and Periodicals," for additional publications.

CHAPTER XXIX

EFFECTS OF TAXATION ON INVESTMENT POLICIES

Method of approach.—No text on investments would be complete without some reference to taxation as related to the investment problem. One has the choice here of several methods of approach. From a practical standpoint, the investor is interested in the effect of various taxes on the net yield of different types of securities, as well as the amount of trouble involved in paying taxes on the principal or income of the investment. The economist is interested essentially in the incidence of taxation and the economic effects thereof on production, consumption, and saving. The lawyer, on the other hand, is interested primarily in the legal aspects of taxation.

It will be impossible for us in the space that can properly be allotted here to discuss the question of taxation from all these viewpoints. In fact, we shall attempt only a brief outline of the entire subject of taxation, with special reference to the problems that arise in the investor's practical work of making commitments and managing the investment.

Classification of taxes.—From the standpoint of the investor, taxes may be classified in one of two ways: (1) on the basis of the taxing authority; (2) on the basis of the place where the tax is incurred. The taxing authority may be either a foreign government, the Federal government, a state, or a local division of a state. The tax may be incurred by the investor himself, because of his ownership of a security or of property, or it may be incurred by the corporation or other entity that owns the property, the income from which is the source of the investor's income.

Foreign taxes.—Where income is derived from a foreign business or from foreign property, the country in which the business or property is located may tax the income. The subject is too complicated to be treated here at length. In the

case of securities, the tax position of an investment ordinarily can be obtained from the house through which the securities were issued. Generally, securities originating in foreign countries are brought out in such a way that foreign taxes will not be incurred by the American holder.¹

Federal taxes.—Investors are interested in three forms of Federal taxes:

1. The income tax.
2. The estate tax.
3. The stock transfer tax.

These taxes will be discussed briefly in the following pages.

State taxes.—State taxes, in which the investor, as such, is interested, include income taxes, inheritance taxes, stock transfer taxes, and the general property tax.

Federal income tax.—The present Federal income tax dates back to the year 1913 and was made possible by the passage of the XVIth amendment to the Federal Constitution, which gives the Federal government the right to levy and to collect income taxes without reference to its apportionment among the different states on the basis of their population.

For the first few years during which the present series of income taxes were in force the rates of taxation were moderate and the effects on investment holdings—including even those of the receivers of large incomes—were not pronounced. As far back as the act of 1913, however, we find the distinction between normal and surtaxes. With the entrance of America into the European War, and because of the greatly increased needs of the government for more revenue, both normal rates and surtaxes were raised.

¹ The German situation may be taken as an example. German corporations are required to deduct an income tax of 10 per cent before paying dividends to stockholders. Since the tax is delivered to the tax officer by the corporation, an American stockholder would have no trouble in connection with the tax, and ordinarily would calculate his yield on the amount of dividends actually received. Bonds are treated in the same way, but the Minister of Finance may permit a corporation to issue bonds in a foreign country exempt from this tax. (Special Circular No. 161 Department of Commerce, Division of Commercial Laws.) Citizens of the United States are entitled to credit against income taxes paid to the United States for income taxes paid to foreign countries and can get such credit by submitting what is known as Form 1116 with their income tax returns.

Rates under the present act.—The present tax is progressive, that is, the rates become heavier as the recipient's income increases, and is based on the economic theory that one's ability to pay increases at a more rapid rate than his income.

The calculation of the tax after the net income is determined is divided into several parts:

1. The normal tax, which is based on the net income above certain exemptions, that is, an exemption of \$1,500 for single persons, or an exemption of \$3,500 for married persons or the heads of families.

2. The calculation of the surtax, which begins at 1 per cent on amounts above \$10,000 and gradually increases to 20 per cent for amounts above \$100,000. Certain allowances are made for "earned income" as distinguished from income, for example, from securities, though this allowance in the case of large incomes is relatively small.

The tax for married and unmarried persons with incomes of various amounts can quickly be determined from the table on page 768.

What income is taxed.—All income of residents of the United States derived from within the United States, and of citizens from wherever derived, is taxed. To this there are, of course, certain exceptions. For example, the income derived from states or cities, whether as salaries or as income from bonds, is excluded because the Federal government cannot interfere with state operations. Cash dividends are subject to the surtax, but not to the normal tax; the theory is that the normal tax has already been covered by the tax on the corporation declaring and paying the dividend. Since the tax is on net income, business expenses, but not personal expenses, are deductible. The members of a partnership pay their own taxes on their shares in the partnership income, but the partnership as such is not taxed. Fiduciaries file returns of income, but as such pay taxes only where the income is not paid or payable to their beneficiaries, for, wherever the trustee pays to the beneficiary or has income that is payable under the terms of the trust to the beneficiary, the latter is required to add such income to his other income and to pay a tax on the full amount. Corporations pay a corporate income tax of 13½ per cent on net income. They are permitted to deduct from

TABLE SHOWING THE FEDERAL INCOME TAX ON INDIVIDUALS*

SINGLE PERSON (Exemption \$1,500)						MARRIED PERSON (Exemption \$3,500)					
1	2	3	4	5	6	7	8	9	10	11	12
Net Income	Normal Tax Rate %	Sur- tax Rate %	Normal Tax Rate Plus Sur- tax Rate %	Total Tax Payable	Ratio of Total Tax to Net Income	Normal Tax Rate %	Sur- tax Rate %	Normal Tax Rate Plus Sur- tax Rate %	Total Tax Payable	Ratio of Total Tax to Net Income	Net Income
\$				\$					\$		\$
1,500	...	...	...	...	...	...	...	...	...	...	1,500
2,000	1 1/2	...	1 1/2	5.63	.003	...	...	...	...	...	2,000
3,000	1 1/2	...	1 1/2	16.88	.006	...	...	...	...	...	3,000
3,500	1 1/2	...	1 1/2	22.50	.006	...	...	...	...	...	3,500
4,000	1 1/2	...	1 1/2	28.13	.007	1 1/2	...	1 1/2	5.63	.001	4,000
5,000	1 1/2	...	1 1/2	39.38	.008	1 1/2	...	1 1/2	16.88	.003	5,000
5,500	1 1/2	...	1 1/2	45.00	.008	1 1/2	...	1 1/2	22.50	.004	5,500
6,000	3	...	3	56.25	.009	1 1/2	...	1 1/2	28.13	.005	6,000
7,500	3	...	3	90.00	.012	1 1/2	...	1 1/2	45.00	.006	7,500
8,000	3	...	3	101.25	.013	3	...	3	56.25	.007	8,000
9,500	3	...	3	135.00	.014	3	...	3	90.00	.009	9,500
10,000	5	...	5	153.75	.015	3	...	3	101.25	.010	10,000
11,500	5	1	6	221.25	.019	3	1	4	146.25	.013	11,500
12,000	5	1	6	243.75	.020	5	1	6	168.75	.014	12,000
14,000	5	1	6	333.75	.024	5	1	6	258.75	.018	14,000
16,000	5	2	7	438.75	.027	5	2	7	363.75	.023	16,000
18,000	5	3	8	558.75	.031	5	3	8	483.75	.027	18,000
20,000	5	4	9	693.75	.035	5	4	9	618.75	.031	20,000
22,000	5	5	10	893.75	.041	5	5	10	818.75	.037	22,000
24,000	5	6	11	1,113.75	.046	5	6	11	1,038.75	.043	24,000
26,000	5	7	12	1,353.75	.052	5	7	12	1,278.75	.049	26,000
28,000	5	7	12	1,593.75	.057	5	7	12	1,518.75	.054	28,000
30,000	5	8	13	1,853.75	.062	5	8	13	1,778.75	.059	30,000
32,000	5	8	13	2,113.75	.066	5	8	13	2,038.75	.064	32,000
34,000	5	9	14	2,393.75	.070	5	9	14	2,318.75	.068	34,000
36,000	5	9	14	2,673.75	.074	5	9	14	2,598.75	.072	36,000
38,000	5	10	15	2,973.75	.078	5	10	15	2,898.75	.076	38,000
40,000	5	10	15	3,273.75	.082	5	10	15	3,198.75	.080	40,000
42,000	5	11	16	3,593.75	.086	5	11	16	3,518.75	.084	42,000
44,000	5	11	16	3,913.75	.089	5	11	16	3,838.75	.087	44,000
46,000	5	12	17	4,253.75	.092	5	12	17	4,178.75	.091	46,000
48,000	5	12	17	4,593.75	.096	5	12	17	4,518.75	.094	48,000
50,000	5	13	18	4,953.75	.100	5	13	18	4,878.75	.098	50,000
52,000	5	13	18	5,313.75	.102	5	13	18	5,238.75	.101	52,000
56,000	5	14	19	6,073.75	.108	5	14	19	5,998.75	.107	56,000
60,000	5	15	20	6,873.75	.115	5	15	20	6,798.75	.113	60,000
64,000	5	16	21	7,713.75	.121	5	16	21	7,638.75	.119	64,000
70,000	5	17	22	9,033.75	.129	5	17	22	8,958.75	.128	70,000
80,000	5	18	23	11,333.75	.142	5	18	23	11,258.75	.141	80,000
90,000	5	19	24	13,733.75	.153	5	19	24	13,658.75	.152	90,000
100,000	5	19	24	16,133.75	.161	5	19	24	16,058.75	.161	100,000
200,000	5	20	25	41,133.75	.206	5	20	25	41,058.75	.205	200,000
300,000	5	20	25	66,133.75	.220	5	20	25	66,058.75	.220	300,000
400,000	5	20	25	91,133.75	.228	5	20	25	91,058.75	.228	400,000
500,000	5	20	25	116,133.75	.232	5	20	25	116,058.75	.232	500,000
Over 500,000	5	20	25	.....	....	5	20	25	.....	...	Over 500,000

* Credit for "earned net income" is computed on the entire net income up to \$20,000. On net incomes in excess of \$20,000 the credit has been allowed on an "earned net income" of \$20,000.

this income all sums paid out as interest to bondholders and all sums which they themselves receive as dividends from other companies taxed under the law. In general, it may be said that, wherever the holders of beneficial interests in an associa-

tion organized in the form of a trust, with trustees who collect income and pass it over to the holder of the beneficial interests, are permitted to exercise control over the trust, the whole arrangement will be taxed as a corporation and the holder of the beneficial interests will be taxed as stockholders; otherwise the trust will be treated as any other fiduciary relationship.

Income includes not only salaries, dividends, interest, and business profits, but profits derived from the sale of property. Exchanges of securities in reorganizations do not result in taxable income, nor does the exchange of real estate for real estate; but gain derived from exchange of securities outside of reorganization is taxable.²

Investors are particularly interested in that part of the act which refers to "capital net gains." The net gain on transactions consummated after December 31, 1921, involving the sale of assets held for at least two years, is so classified. From our standpoint the essential type of income here involved is the profit resulting from the sale of securities or of real estate held for more than two years. The taxpayer has the option of deducting net capital gains, as defined in the statute, from his net income, in which case he is taxed on the former at the flat rate of $12\frac{1}{2}$ per cent. In this way the taxpayer can limit his tax on profit from investment operations to the $12\frac{1}{2}$ per cent figure. A glance at the table in a previous section of this text will show that this option is valuable to persons whose income from other sources is about \$70,000 or more.

Taxation of corporate incomes.—Under the 1926 law the income of corporations is taxable at $13\frac{1}{2}$ per cent. Although dividends on stock held are exempt from the so-called normal tax, from the standpoint of the stockholder the corporation income tax constitutes double taxation within certain limits. It is debatable whether the $13\frac{1}{2}$ per cent tax does or does not constitute double taxation so far as the bondholder is concerned, since the tax is imposed on the net income of the corporation after bond interest has been paid and thus is subordinate to the bondholders' claim. As against this argument, however, is the one that subsequent deduction of the tax re-

² The word "reorganization" has a very technical meaning in the tax law, for which the law and regulations *must be consulted*. The statements in this section are very general and in practice are subject to many limitations, a discussion of which is beyond the scope of this book.

duces the net income of the corporation, which, in turn, reduces the surplus that determines in part the safety factor behind the bonds. We are not prepared to agree fully with this argument. In the first place, were such income not paid out as a tax it might be paid out as a dividend. Secondly, the high taxes of recent years, while using up some of the corporation's earnings, have had the effect of restricting the payment of cash dividends, and have thus tended to increase surplus. In this way the practical effect in many cases has been to enhance the security behind the bonds. However, it must be granted that in so far as the shareholder of a corporation comes in the surtax class he is subject to double taxation because of the corporate tax. In any event, such part of his income as is represented by the ownership of common stocks is penalized to the extent that his personal income tax is less than the $13\frac{1}{2}$ per cent corporation tax (now 12 per cent under the 1928 Act).³

The effect of income taxes on security yields.—The income from Federal government, from state, and from municipal bonds is entirely or partially exempt from Federal income taxes. Federal issues dated prior to 1913, the First Liberty $3\frac{1}{2}$'s, and so-called instrumentalities of the Federal government, which include bonds issued under the Farm Loan System, obligations of the Philippine Islands, and of the Territory of Hawaii, are totally exempt from Federal income taxes, as are state and municipal bonds.

The existence of securities of this nature, whose income is totally or partially exempt from income taxes, creates a problem for the investor whose income is large. Let us consider the case of an individual whose taxable income is in excess of \$100,000. If he is to consider the purchase of nontax exempt bonds, the return from which will raise his present income above \$100,000, the yield thereon will have to be sufficient to give a return equal to that on tax exempt issues plus the amount of tax he will be required to pay. Otherwise, he will do better to purchase tax exempt securities. The total tax on income in excess of \$100,000 is 25 per cent (made up of a normal tax of 5 per cent and a surtax of 20 per cent). A 6 per cent bond selling at par will net such an investor only $4\frac{1}{2}$ per cent after the payment of a 25 per cent income tax. From the schedule

³ Stock dividends, as such, are not taxable under the Federal income tax. Only the taxable gain therefrom in case of sale is taxable. Similarly, rights to subscribe to new stock, as such, are not taxable.

of taxes to be found on page 772, an investor may determine the relative values to him of taxed and of tax exempt securities at varying rates of income.

In this connection, however, the investor should consider the effect of possible subsequent reductions in the income tax. Every reduction in the rate of income tax will, of course, lower the value of tax exemption to the investor. Many investors at the present time (1928) are willing to suffer a slight disadvantage in the purchase of taxable securities, on the theory that subsequent tax revision will be downward.

Tax-Free vs. Taxable Bonds *

(Based on Revenue Act of 1926)

A chart showing the effect of Federal income tax on yield from tax-free and taxable bonds in 1926 is given on the following page.

Income from certain U. S. Government, state and municipal bonds is exempt from the federal income tax, rate of which, for 1926 income, ranges from $1\frac{1}{2}\%$ to 25% , according to amount of income. This table has been compiled, based on the Revenue Act of 1926, to indicate the approximate yield which taxable bonds must return to equal the return from tax-free bonds yielding $3\frac{1}{2}\%$ to 6% , when held by investors enjoying varying amounts of annual income (subject to surtax) ranging from \$20,000 to \$100,000 or more.

Example: Individual with income (subject to surtaxes) of about \$50,000 purchases taxable bonds at price to net 4.88% . Interest derived from this investment is additional income and is subject to a normal tax of 5% and a surtax (on income between \$48,000 and \$52,000) of 13% , or a total tax rate of 18% . Deducting the tax computed at this rate, the actual income from these bonds is reduced to 4% . In other words, for an investor in this income class a tax exempt bond yielding only 4% would pay an equivalent actual income yield. In the table below the yield from tax free bonds is shown in black face figures in extreme left hand column, with the equivalent yields from taxable bonds indicated for each income bracket (indicated at top of columns) from \$20,000 up.

This table is offered as a guide to assist the purchaser of bonds to choose intelligently between taxable and tax-free investments. It is computed on the theory that any change in an individual's taxable income resulting from a switching of investments from a taxable to a tax free status, or vice versa, is effective at the highest brackets or the "top" of his income and, hence, the highest surtax rate has been applied in computing these equivalent yields. Because of the change of tax

* Reprinted from *The Bond Buyer* of New York.

Tax-Free vs. Taxable Bonds
(Based on Revenue Act of 1926)

Tax-Free Yield	\$20M to \$22M (10%)	\$22M to \$24M (11%)	\$24M to \$28M (12%)	\$28M to \$32M (13%)	Corporation Tax (13½%)	\$32M to \$36M (14%)	\$36M to \$40M (15%)	\$40M to \$44M (16%)	\$44M to \$48M (17%)	\$48M to \$52M (18%)	\$52M to \$56M (19%)	\$56M to \$60M (20%)	\$60M to \$64M (21%)	\$64M to \$70M (22%)	\$70M to \$80M (23%)	\$80M to \$100M (24%)	Over \$100M (25%)
3½	3.89	3.93	3.98	4.02	4.05	4.07	4.12	4.17	4.22	4.27	4.32	4.37	4.43	4.49	4.54	4.60	4.67
3½	4.17	4.21	4.26	4.31	4.33	4.36	4.41	4.46	4.52	4.57	4.63	4.69	4.75	4.81	4.87	4.93	5.00
3½	4.30	4.35	4.40	4.45	4.48	4.50	4.56	4.61	4.67	4.72	4.78	4.84	4.90	4.97	5.03	5.10	5.17
4	4.44	4.49	4.54	4.60	4.62	4.65	4.70	4.76	4.82	4.88	4.94	5.00	5.06	5.13	5.19	5.26	5.33
4.05	4.50	4.55	4.60	4.65	4.68	4.71	4.76	4.82	4.88	4.94	5.00	5.06	5.13	5.19	5.26	5.33	5.40
4.10	4.55	4.61	4.66	4.71	4.74	4.77	4.82	4.88	4.94	5.00	5.06	5.12	5.19	5.26	5.32	5.39	5.47
4.15	4.61	4.66	4.71	4.77	4.80	4.82	4.88	4.94	5.00	5.06	5.12	5.19	5.25	5.32	5.39	5.46	5.53
4.20	4.67	4.72	4.77	4.83	4.85	4.88	4.94	5.00	5.06	5.12	5.18	5.25	5.32	5.38	5.45	5.53	5.60
4½	4.72	4.77	4.83	4.88	4.91	4.94	5.00	5.06	5.12	5.18	5.25	5.31	5.38	5.45	5.52	5.59	5.67
4.30	4.78	4.83	4.89	4.94	4.97	5.00	5.06	5.12	5.18	5.24	5.31	5.37	5.44	5.51	5.58	5.66	5.73
4.35	4.83	4.89	4.94	5.00	5.03	5.06	5.12	5.18	5.24	5.30	5.37	5.44	5.51	5.58	5.65	5.72	5.80
4.40	4.89	4.94	5.00	5.06	5.09	5.12	5.18	5.24	5.30	5.36	5.43	5.50	5.57	5.64	5.71	5.79	5.87
4.45	4.94	5.00	5.06	5.11	5.14	5.17	5.23	5.30	5.36	5.43	5.49	5.56	5.63	5.70	5.78	5.85	5.93
4½	5.00	5.06	5.11	5.17	5.20	5.23	5.29	5.36	5.42	5.49	5.55	5.62	5.70	5.77	5.84	5.92	6.00
4.60	5.11	5.17	5.23	5.29	5.32	5.35	5.41	5.48	5.54	5.61	5.68	5.75	5.82	5.90	5.97	6.05	6.13
4.70	5.22	5.28	5.34	5.40	5.43	5.46	5.53	5.59	5.66	5.73	5.80	5.87	5.95	6.02	6.10	6.18	6.27
4½	5.28	5.34	5.40	5.46	5.49	5.52	5.59	5.65	5.72	5.79	5.86	5.94	6.01	6.09	6.17	6.25	6.33
4.80	5.33	5.39	5.45	5.52	5.55	5.58	5.65	5.71	5.78	5.85	5.92	6.00	6.07	6.15	6.23	6.31	6.40
4.90	5.44	5.50	5.57	5.63	5.66	5.70	5.76	5.83	5.90	5.97	6.05	6.12	6.20	6.28	6.36	6.45	6.53
5	5.55	5.62	5.68	5.75	5.78	5.81	5.88	5.95	6.02	6.10	6.17	6.25	6.33	6.41	6.49	6.58	6.67
4½	5.83	5.90	5.96	6.03	6.07	6.10	6.18	6.25	6.32	6.40	6.48	6.56	6.64	6.73	6.82	6.91	7.00
5½	6.11	6.18	6.25	6.32	6.36	6.39	6.47	6.55	6.63	6.71	6.79	6.87	6.96	7.05	7.14	7.24	7.33
5½	6.39	6.46	6.53	6.61	6.65	6.69	6.76	6.84	6.93	7.01	7.10	7.19	7.28	7.37	7.47	7.56	7.67
6	6.67	6.74	6.82	6.90	6.94	6.98	7.06	7.14	7.23	7.32	7.41	7.50	7.59	7.69	7.79	7.89	8.00

rates from year to year, it is useless to attempt an exact computation of the value of tax exemption over a series of years and for this reason we believe the chart is sufficiently comprehensive to serve the purpose for which it is intended.

Local Tax Exemption: Where it is desired to make a comparison which takes into consideration exemption from a state and the federal income tax this table may also be used. The figures shown in parentheses in the column captions represent total tax rate and figures below are computed on the basis of such rates. For example: Take case of individual with \$60,000 to \$64,000 income and resident of a state levying income tax of 3% on incomes of such size. Total tax rate, for purpose of comparing exempt and taxable investments, would be 24%, made up of federal normal, 5%, federal surtax, 16%, and state tax, 3%. Instead of using column headed "\$60M to \$64M (21%)," this investor would refer to column headed "\$80M to \$100M (24%)."

Corporation Tax Comparison: Under the 1926 law net income of corporations is taxable at the flat rate of $13\frac{1}{2}\%$. A special column headed "Corporation Tax ($13\frac{1}{2}\%$)" has been incorporated in the table on the preceding page showing the yields on taxable bonds equivalent to tax-free yields shown in extreme left-hand column.

The effect of income taxes on stock investments.—Another problem is presented in comparing the relative merits of stocks and bonds from a tax viewpoint. Ignoring for the moment the fact that corporations frequently agree with the holders of their bonds to pay without deduction the normal Federal income tax up to 2, and in some cases, 4, per cent, the investor who buys stocks purely for their present yield can profit by the exemption which dividends enjoy in respect to the normal tax. The exemption has a special significance in the case of high grade preferred stocks and guaranteed stocks which, in other respects, are fairly comparable to bonds. It will be remembered that dividends derived from stock are taxable only at the surtax rates; hence, it follows that a 6 per cent stock selling at par under the 1926 Act nets a full 6 per cent to the purchaser whose taxable income is not over \$10,000, and who, therefore, pays no surtax. On the other hand, if the investors' income is between \$8,000 and \$10,000, a 6 per cent bond, selling at par, will net only 5.7 per cent, in case the corporation does not agree to remit any part of the normal tax, or 5.82 per cent, in case the corporation agrees to remit up to 2 per cent.

So much for the relative position of taxable and tax exempt

securities under the Federal income tax. There is, however, one more phase of the Federal income tax that requires comment. We refer here to the effect of this tax on the buying and selling of securities. Profits derived from the sale of securities not held for at least two years are taxable at the same rates as other taxable income. With respect to profits resulting from the sale of securities held for more than two years the capital gain tax of $12\frac{1}{2}$ per cent may be applied.⁴ In the case of individuals with large taxable incomes, there is undoubtedly a strong disposition to hold securities in which they enjoy book profits rather than to sell and convert their profits into cash. Similarly, where an investor holds securities showing a book loss, there is a strong inducement to sell and convert the book loss into a real loss in order that it may be deducted from taxable income.⁵ The extent to which this has been influential in supporting stock prices in recent years cannot be measured statistically. Deductively, however, there are strong grounds for supposing that many wealthy investors have held stocks that advanced sharply during 1925, 1926, and 1927 rather than sell and pay taxes. The writer knows of many instances where this practice has prevented the taking of profits that otherwise would have been taken.

The effect of high income taxes on corporate dividend policies.—Another effect of the heavy surtaxes imposed during and after the War has been to encourage the reinvestment of corporate surpluses in the business rather than their distribution as dividends; this practice is based on the hope that taxes will be reduced and on the desire to delay ultimate payment until they are reduced. The practice is to be noted particularly in the case of corporations whose stock is closely and largely held by wealthy stockholders. Even under the present (1926) law, with the tax on corporate income equal to $13\frac{1}{2}$ per cent as compared with a total tax of 25 per cent on incomes in excess of \$100,000, the situation favors this action in many cases. On the other hand, the fact that stock dividends are not taxable as such has encouraged directors in many cases to capitalize surplus by stock dividends and stock split-ups.

⁴ See p. 769.

⁵ Such losses may be applied to capital gains up to the amount of such gains. In the case of capital net losses the maximum amount that can be deducted is $12\frac{1}{2}$ per cent of the "capital net loss."

In order to prevent the abuse of this method of avoiding present taxation, and especially to prevent the formation of holding companies organized to avoid the receipt of dividends, the 1926 law authorizes the imposition of an additional tax of 50 per cent on the net income of corporations "formed or availed of for the purpose of preventing the imposition of the surtax upon its shareholders through the medium of permitting its gains and profits to accumulate instead of being divided or distributed." (Revenue Act, 1926, Section 220.)

The fact that the operation of this levy, and of similar levies authorized by previous acts, depends on an interpretation of what constitutes the normal capital requirements of the business has made it difficult to enforce, especially in the case of operating companies. In any event the large stock distributions that have been in evidence among the more widely known corporations during recent years have been attributed by many to the effort on the part of directors to protect wealthy stockholders from the effect of high surtaxes.

State income taxes.—The states of Massachusetts, Mississippi, Missouri, New York, North Carolina, North Dakota, Oregon, South Carolina, Virginia, and Wisconsin impose income taxes on corporations. The states of Arkansas, Delaware, Massachusetts, Mississippi, New York, North Dakota, Oklahoma, Oregon, South Carolina, Virginia, and Wisconsin impose individual income taxes.

The laws of these various states differ somewhat in respect to the determination of net taxable income and rates of taxation. It will be impossible to consider the detail of any of these state laws. In general, however, it may be stated that they are patterned after the Federal law, except that the rates of tax are lighter than the Federal tax. The same problems in reference to the yield of tax exempt vs. taxable securities are thus created in states with income taxes as are found under the Federal income tax. In such states obligations and instrumentalities of the Federal government, being entirely tax exempt, enjoy a still further advantage over corporate issues that are taxable. Similarly, where issues of resident corporations or bonds of the state itself or municipalities therein are tax exempt, a differential is created in their favor and they accordingly enjoy a so-called special market as compared with securities issued outside the state.

The Federal estate tax.—Theoretically, a person owns property as long as he lives. When he dies, this property belongs to the state; but in modern civilized countries, the organized state permits each owner to designate the person who will take his property at his death; indeed, the state itself designates certain persons related to a decedent who shall take his property if the decedent has made no disposition by his own will and testament. It will be seen, therefore, that the right of succession upon death is a privilege granted by the state. The state, therefore, has the right to tax this privilege. Taxes laid in pursuance of this principle are called succession taxes, or death duties, the latter term being quite common in Great Britain.

Two kinds of succession taxes.—Succession taxes are of two kinds:⁶ those which are levied on the entire property of the decedent, and those which are levied on the shares that each successor takes. The former are known as estate taxes, the latter, as inheritance taxes. The Federal government has passed an act of the former character, the nature and effect of which will be described in the following paragraphs.

History of Federal estate tax.—A small tax on legacies in the form of a stamp duty on the receipt therefor was effective in the United States between 1798 and 1802. Although succession taxes have been used by the Federal government as war revenue measures, no such tax was used to finance either the War of 1812 or the Mexican War. The Civil War was financed partly by an inheritance tax; the Spanish War of 1898, by a tax that, in theory, was partly an estate tax and partly an inheritance tax. The present Federal estate tax is the successor of an act passed in 1916.

The present Federal estate tax.—Decedents' estates are taxed by the law in full, not at the time a will is made but at the time the decedent dies. Ordinarily, therefore, investors are interested only in the current law and in the changes that are likely to be made in that law. The tax is levied on all the property of a resident decedent, whether located within the United States or elsewhere, except real property without the jurisdiction of the United States and tangible personal property

⁶ For a general description of succession taxes, including especially the historical and economic aspect of the subject, see William J. Shultz, "The Taxation of Inheritance."

having a permanent situs outside the United States. In the case of a nonresident decedent, the tax is levied on all property within the jurisdiction; this includes stock of a domestic corporation, but does not include money deposited in banks of the United States, if the decedent was not engaged in business in this country, nor does it include money received from domestic companies as the proceeds of insurance on the life of a nonresident decedent. The tax covers not only transfers made by will or by the intestate laws, but transfers made in contemplation of death or intended to take effect in possession or enjoyment at or after death as well as transfers of interest in a joint estate or an estate by the entirety and upon the exercise of a general power of appointment.⁷

The tax is on the net estate.—In the case of residents, the gross estate is diminished by the amount of debts and by an exemption of \$100,000; in the case of foreign estates all the debts of the decedent are not subtracted from the gross estate, but only a proportionate part of such debts, based on the amount of property within the United States as compared with the entire property of the decedent. The exemption of \$100,000 is not allowed to decedents resident in other countries. Exemptions are also given to residents and nonresidents, but under different rules, for gifts made to eleemosynary institutions.

Rates of Federal estate tax.—The rates under the various Federal acts since 1916 are shown in the table on page 778.

Credits.—An important provision of the law is that which permits an allowance against the tax due of the amount of succession taxes paid to any state or territory or the District of Columbia not to exceed 80 per cent of the Federal estate tax. In most large estates 80 per cent of the Federal estate tax is as much as the decedent's estate would have to pay to all the states of the Union in the form of inheritance taxes.

⁷ Where several persons own the same piece of property and the survivors are to take the interest of a decedent owner, the estate is said to be a joint estate. Property held in this way by husband and wife is said to be held by the entirety. If *A* gives property to *B* for *B*'s life and permits *C* to nominate the person who shall receive it upon *B*'s death, *C* is said to have a power of appointment over the property. If the property is in the United States its transfer upon the death of *B* is taxable. For a complete discussion of all current problems respecting estate and inheritance taxes, see the Prentice-Hall Inheritance Tax Service.

TABLE FOR COMPUTING FEDERAL ESTATE TAX

Net Estate (after deductions and exemption)		1	2	Date of Death				4*	5†		
Exceeding	Not Exceeding	Sept. 9, 1916, to Mar. 2, 1917, inclusive (Revenue Act of 1916)		Mar. 3, 1917, to Oct. 3, 1917, inclusive (Amend- ment)		Oct. 4, 1917, to 6:55 p.m. Feb. 24, 1919, inclusive (Revenue Act of 1917)		From 6:55 p.m., Feb. 24, 1919, to 10:25 a.m., Feb. 26, 1926, inclu- sive (Revenue Acts of 1918, 1921 and 1924, as amended)		Revenue Act of 1926 After 10:25 A.M., February 26, 1926	
		Rate %	Total Tax on Block	Rate %	Total Tax	Rate %	Total Tax on Block	Rate %	Total Tax	Rate %	Total Tax on Block
\$ 50,000	\$50,000	1	\$500	1½	\$750	2	\$1,000	1	\$500	1	\$500
100,000	50,000	2	1,000	3	1,500	4	2,000	2	1,000	2	1,000
150,000	50,000	3	1,500	4	2,000	5	2,500	3	1,500	3	1,500
200,000	50,000	4	2,000	5	2,500	6	3,000	4	2,000	4	2,000
250,000	50,000	5	2,500	6	3,000	7	3,500	5	2,500	5	2,500
300,000	50,000	6	3,000	7	3,500	8	4,000	6	3,000	6	3,000
350,000	50,000	7	3,500	8	4,000	9	4,500	7	3,500	7	3,500
400,000	50,000	8	4,000	9	4,500	10	5,000	8	4,000	8	4,000
450,000	50,000	9	4,500	10	5,000	11	5,500	9	4,500	9	4,500
500,000	50,000	10	5,000	11	5,500	12	6,000	10	5,000	10	5,000
550,000	50,000	11	5,500	12	6,000	13	6,500	11	5,500	11	5,500
600,000	50,000	12	6,000	13	6,500	14	7,000	12	6,000	12	6,000
650,000	50,000	13	6,500	14	7,000	15	7,500	13	6,500	13	6,500
700,000	50,000	14	7,000	15	7,500	16	8,000	14	7,000	14	7,000
750,000	50,000	15	7,500	16	8,000	17	8,500	15	7,500	15	7,500
800,000	50,000	16	8,000	17	8,500	18	9,000	16	8,000	16	8,000
850,000	50,000	17	8,500	18	9,000	19	9,500	17	8,500	17	8,500
900,000	50,000	18	9,000	19	9,500	20	10,000	18	9,000	18	9,000
950,000	50,000	19	9,500	20	10,000	21	10,500	19	9,500	19	9,500
1,000,000	50,000	20	10,000	21	10,500	22	11,000	20	10,000	20	10,000
1,050,000	50,000	21	10,500	22	11,000	23	11,500	21	10,500	21	10,500
1,100,000	50,000	22	11,000	23	11,500	24	12,000	22	11,000	22	11,000
1,150,000	50,000	23	11,500	24	12,000	25	12,500	23	11,500	23	11,500
1,200,000	50,000	24	12,000	25	12,500	26	13,000	24	12,000	24	12,000
1,250,000	50,000	25	12,500	26	13,000	27	13,500	25	12,500	25	12,500
1,300,000	50,000	26	13,000	27	13,500	28	14,000	26	13,000	26	13,000
1,350,000	50,000	27	13,500	28	14,000	29	14,500	27	13,500	27	13,500
1,400,000	50,000	28	14,000	29	14,500	30	15,000	28	14,000	28	14,000
1,450,000	50,000	29	14,500	30	15,000	31	15,500	29	14,500	29	14,500
1,500,000	50,000	30	15,000	31	15,500	32	16,000	30	15,000	30	15,000
1,550,000	50,000	31	15,500	32	16,000	33	16,500	31	15,500	31	15,500
1,600,000	50,000	32	16,000	33	16,500	34	17,000	32	16,000	32	16,000
1,650,000	50,000	33	16,500	34	17,000	35	17,500	33	16,500	33	16,500
1,700,000	50,000	34	17,000	35	17,500	36	18,000	34	17,000	34	17,000
1,750,000	50,000	35	17,500	36	18,000	37	18,500	35	17,500	35	17,500
1,800,000	50,000	36	18,000	37	18,500	38	19,000	36	18,000	36	18,000
1,850,000	50,000	37	18,500	38	19,000	39	19,500	37	18,500	37	18,500
1,900,000	50,000	38	19,000	39	19,500	40	20,000	38	19,000	38	19,000
1,950,000	50,000	39	19,500	40	20,000	41	20,500	39	19,500	39	19,500
2,000,000	50,000	40	20,000	41	20,500	42	21,000	40	20,000	40	20,000
2,050,000	50,000	41	20,500	42	21,000	43	21,500	41	20,500	41	20,500
2,100,000	50,000	42	21,000	43	21,500	44	22,000	42	21,000	42	21,000
2,150,000	50,000	43	21,500	44	22,000	45	22,500	43	21,500	43	21,500
2,200,000	50,000	44	22,000	45	22,500	46	23,000	44	22,000	44	22,000
2,250,000	50,000	45	22,500	46	23,000	47	23,500	45	22,500	45	22,500
2,300,000	50,000	46	23,000	47	23,500	48	24,000	46	23,000	46	23,000
2,350,000	50,000	47	23,500	48	24,000	49	24,500	47	23,500	47	23,500
2,400,000	50,000	48	24,000	49	24,500	50	25,000	48	24,000	48	24,000
2,450,000	50,000	49	24,500	50	25,000	51	25,500	49	24,500	49	24,500
2,500,000	50,000	50	25,000	51	25,500	52	26,000	50	25,000	50	25,000
2,550,000	50,000	51	25,500	52	26,000	53	26,500	51	25,500	51	25,500
2,600,000	50,000	52	26,000	53	26,500	54	27,000	52	26,000	52	26,000
2,650,000	50,000	53	26,500	54	27,000	55	27,500	53	26,500	53	26,500
2,700,000	50,000	54	27,000	55	27,500	56	28,000	54	27,000	54	27,000
2,750,000	50,000	55	27,500	56	28,000	57	28,500	55	27,500	55	27,500
2,800,000	50,000	56	28,000	57	28,500	58	29,000	56	28,000	56	28,000
2,850,000	50,000	57	28,500	58	29,000	59	29,500	57	28,500	57	28,500
2,900,000	50,000	58	29,000	59	29,500	60	30,000	58	29,000	58	29,000
2,950,000	50,000	59	29,500	60	30,000	61	30,500	59	29,500	59	29,500
3,000,000	50,000	60	30,000	61	30,500	62	31,000	60	30,000	60	30,000
3,050,000	50,000	61	30,500	62	31,000	63	31,500	61	30,500	61	30,500
3,100,000	50,000	62	31,000	63	31,500	64	32,000	62	31,000	62	31,000
3,150,000	50,000	63	31,500	64	32,000	65	32,500	63	31,500	63	31,500
3,200,000	50,000	64	32,000	65	32,500	66	33,000	64	32,000	64	32,000
3,250,000	50,000	65	32,500	66	33,000	67	33,500	65	32,500	65	32,500
3,300,000	50,000	66	33,000	67	33,500	68	34,000	66	33,000	66	33,000
3,350,000	50,000	67	33,500	68	34,000	69	34,500	67	33,500	67	33,500
3,400,000	50,000	68	34,000	69	34,500	70	35,000	68	34,000	68	34,000
3,450,000	50,000	69	34,500	70	35,000	71	35,500	69	34,500	69	34,500
3,500,000	50,000	70	35,000	71	35,500	72	36,000	70	35,000	70	35,000
3,550,000	50,000	71	35,500	72	36,000	73	36,500	71	35,500	71	35,500
3,600,000	50,000	72	36,000	73	36,500	74	37,000	72	36,000	72	36,000
3,650,000	50,000	73	36,500	74	37,000	75	37,500	73	36,500	73	36,500
3,700,000	50,000	74	37,000	75	37,500	76	38,000	74	37,000	74	37,000
3,750,000	50,000	75	37,500	76	38,000	77	38,500	75	37,500	75	37,500
3,800,000	50,000	76	38,000	77	38,500	78	39,000	76	38,000	76	38,000
3,850,000	50,000	77	38,500	78	39,000	79	39,500	77	38,500	77	38,500
3,900,000	50,000	78	39,000	79	39,500	80	40,000	78	39,000	78	39,000
3,950,000	50,000	79	39,500	80	40,000	81	40,500	79	39,500	79	39,500
4,000,000	50,000	80	40,000	81	40,500	82	41,000	80	40,000	80	40,000
4,050,000	50,000	81	40,500	82	41,000	83	41,500	81	40,500	81	40,500
4,100,000	50,000	82	41,000	83	41,500	84	42,000	82	41,000	82	41,000
4,150,000	50,000	83	41,500	84	42,000	85	42,500	83	41,500	83	41,500
4,200,000	50,000	84	42,000	85	42,500	86	43,000	84	42,000	84	42,000
4,250,000	50,000	85	42,500	86	43,000	87	43,500	85	42,500	85	42,500
4,300,000	50,000	86	43,000	87	43,500	88	44,000	86	43,000	86	43,000
4,350,000	50,000	87	43,500	88	44,000	89	44,500	87	43,500	87	43,500
4,400,000	50,000	88	44,000	89	44,500	90	45,000	88	44,000	88	44,000
4,450,000	50,000	89	44,500	90	45,000	91	45,500	89	44,500	89	44,500
4,500,000	50,000	90	45,000	91	45,500	92	46,000	90	45,000	90	45,000
4,550,000	50,000	91	45,500	92	46,000	93	46,500	91	45,500	91	45,500
4,600,000	50,000	92	46,000	93	46,500	94	47,000	92	46,000	92	46,000
4,650,000	50,000	93	46,500	94	47,000	95	47,500	93	46,500	93	46,500
4,700,000	50,000	94	47,000	95	47,500	96	48,000	94	47,000	94	47,000
4,750,000	50,000	95	47,500	96	48,000	97	48,500	95	47,500	95	47,500
4,800,000	50,000	96	48,000	97	48,500	98	49,000	96	48,000	96	48,000
4,850,000	50,000	97	48,500	98	49,000	99	49,500	97	48,500	97	48,500
4,900,000	50,000	98	49,000	99	49,500	100	50,000	98	49,000	98	49,000
4,950,000	50,000	99	49,500	100	50,000			99	49,500	99	49,500
5,000,000	50,000	100	50,000					100	50,000	100	50,000

* The Revenue Act of 1926 provides that a credit will be allowed for the amount of any estate, inheritance, legacy, or succession taxes paid to any state or Territory, up to 80 per cent of the Federal estate tax. This credit is limited to taxes actually paid for which claim was made within three years after the filing of the required return.

† By the Revenue Act of 1926 taxes not paid on estates previously taxable at the 1924 rates will be collected at the 1921 rates, and taxes paid on such estates will be refunded to the extent that they were paid in excess of the 1921 rates. In such calculations, credit will be allowed for state inheritance taxes actually paid up to 25 per cent of the Federal estate tax. These rates also apply to gifts made during 1924 and 1925.

The importance of this provision, therefore, lies in the fact that it permits no advantage to people of large fortunes living in states that have no inheritance taxes. Such estates pay a large tax to the Federal government. In the other states the same aggregate amount of death duties is paid, but part only is paid to the Federal government, the rest being paid to the state government.

Death duties and income taxes compared.—Death duties are levied on the capital of an estate; income taxes are levied only on income. It is obvious, therefore, that death duties involve large single payments to the government, whereas income taxes involve payments distributed over the years during which income is received.

The Federal estate tax, in effect, is a direct tax on property, since it is a progressive ad valorem levy on the total amount of the estate. As such, it is a tax on the value of the securities held by the estate. But since, in legal theory, it is a tax on the *right to transfer*, and not a tax on the securities as such, government and civil loans that are exempt under the Federal income tax law are not exempt from taxation under the inheritance tax.

Criticisms of Federal estate tax.—The entire Federal estate tax has recently been subject to criticism by some tax experts and economists, on the ground that, properly, it is a state tax, and, as such, the imposition thereof should be left entirely to the states. It is further argued that heavy taxes discourage the accumulation of property.

Opposed to this general theory is the argument that heavy taxes on the transfer of estates at death, especially those progressively imposed, are socially advantageous, in that large fortunes are thereby broken up. It is now possible, with proper care, to start an estate on a long and growing career. Without the successive inroads, made by death transfer taxes, it is possible for an undue concentration of wealth to take place, thus supporting in luxury descendants who make no contribution to society's progress. By what social right do these individuals come into their favored position? Has not the government done all that it should do in guaranteeing the right to transfer a moderate fortune to the nearest kin of the deceased? We offer no brief for either side, but merely suggest the main points supporting both views.

State succession taxes.—All the states of the Union, except Alabama, Florida, and Nevada, have either inheritance or estate taxes, or both. The District of Columbia has neither tax. Mississippi, North Dakota, and Utah have only an estate tax applicable to both residents and nonresidents; the remaining states—except those above mentioned—have inheritance taxes with or without estate taxes. The following states, in addition, have an estate tax applicable to residents only: California, Colorado, Delaware, Georgia, Maine, Massachusetts, Missouri, New York, Ohio, Vermont, and Virginia. In the following states which have inheritance taxes, the estate taxes apply to nonresidents as well as to residents: Montana, North Carolina, Oregon, Pennsylvania, and Rhode Island. In the following states, the estate tax is imposed primarily to take up the 80 per cent credit allowed in the Federal estate tax:⁸ California, Colorado, Delaware, Georgia, Maine, Massachusetts, Missouri, Montana, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Vermont, and Virginia.

Property subject to state succession taxes.—All tangible property, including real property and personal property, having a fixed situs, is taxable only by the state in which it is located. All other personal property is deemed to be located where the decedent last resided and is taxable there. Intangible personal property may be taxed elsewhere, on the theory that some other jurisdiction has control of its transfer. Since the tax is on the right to transfer, and not on the property itself, any state that controls transfers may tax such transfer. For example, if *A* lived in New York and owned stock of a North Carolina corporation, New York would transfer the stock on the basis of residence and North Carolina would tax it on the basis of control of transfer.⁹ The following table shows the

⁸ See p. 781. Rhode Island had both an inheritance tax and an estate tax and then imposed a third tax—an estate tax to take up the 80 per cent credit.

⁹ The following states tax the stock of domestic corporations found in the estates of nonresidents: Arizona, Arkansas, California, Connecticut, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland (but only special classes of corporations, not including business corporations), Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska (in rare cases only), New Hampshire, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Texas, Utah, Virginia (until Jan. 1, 1929), Washington, West Virginia, and Wisconsin.

In the following states, nonresident estates are taxed in respect to the stock of foreign corporations if the corporation has a transfer office in the state: Montana, New Mexico, and Oklahoma.

taxability in the various states of bonds, notes, and mortgages found in estates of nonresident decedents:

TAXABILITY OF BONDS, NOTES, AND MORTGAGES*

Questionnaire	BONDS					NOTES		MORTGAGES	
	Domestic		Foreign		Municipal	Payable within State	Payable outside State	Real Estate within State	Property without State
	Unreg. A	Reg. B	Unreg. A	Reg. B					
Alabama (R).....	No inheritance or estate tax.								
Arizona.....	Y	Y	Y	Y	Y	Y	N	Y	Y
Arkansas.....	N	N	N	N	N	N	N	N	N
California (R).....	N	N	N	N	N	N	N	N	N
Colorado (R).....	Intangibles of nonresident decedents not taxed.								
Connecticut (R).....	N	N	Y	Y	N	N	N	N	N
Delaware (R).....	Intangibles of nonresident decedents not taxed.								
District of Columbia (R).....	No inheritance or estate tax.								
Florida (R).....	No inheritance or estate tax.								
Georgia (R).....	Y	Y	Y	N	N	N	D	Y	Y
Idaho.....	Y	D	Y	N	N	N	Y	Y	N
Illinois (R).....	Y	N	Y	N	N	N	Y	Y	N
Indiana.....	Y	N	Y	N	N	N	Y	Y	N
Iowa.....	Y	Y	Y	Y	N	Y	Y	Y	Y
Kansas.....	Q	N	Q	N	Q	N	Q	Q	N
Kentucky ¹	N	N	N	N	N	N	N	N	N
Louisiana.....	Y	N	Y	N	Y	N	Y	Y	N
Maine (R) ²	N	N	N	N	N	N	Y	Y	Q
Maryland ³ (R).....	Intangibles of nonresident decedents not taxed.								
Massachusetts ⁴ (R).....	Intangibles of nonresident decedents not taxed. [†]								
Michigan.....	Y	Y	Y	N	N	Y	Y	Y	N
Minnesota.....	Y	Y	Y	N	N	Y	Y	Y	N
Mississippi (R).....	Y	N	Y	N	Y	N	Y	Y	N
Missouri.....	Y	N	Y	N	Y	N	Y	Y	N
Montana.....	Y	Y	Y	Y	N	Y	Y	Y	N
Nebraska.....	See footnote ⁵								
Nevada (R).....	No inheritance or estate tax.								
New Hampshire (R).....	Y	N	Y	Y	N	N	Y	Y	N
New Jersey (R).....	Intangibles of nonresident decedents not taxed.								
New Mexico.....	Y	Y	Q	Y	N	Y	Y	Y	N
New York (R).....	N	N	N	N	N	N	N	N	N
North Carolina.....	Y	Y	Y	Y	N	N	Y	Y	N
North Dakota.....	N	N	N	N	N	N	N	N	N
Ohio (R).....	Y	N	Y	Y	N	N	Y	Y	N
Oklahoma.....	Y	N	Y	Y	N	N	Y	Y	N
Oregon (R).....	Y	Y	Y	Y	N	N	Y	Y	N
Pennsylvania (R).....	N	N	N	N	N	N	N	N	N
Philippine Is.....	Y	Y	Y	Y	N	Y	Y	Y	N
Porto Rico.....	D	D	D	D	D	D	D	D	D
Rhode Island (R).....	Intangibles of nonresident decedents not taxed.								
South Carolina.....	Y	Y	Y	Y	N	N	Y	Y	Y
South Dakota.....	Y	Y	Y	N	N	Y	Y	Y	Y
Tennessee (R).....	Intangibles of nonresident decedents not taxed.								
Texas.....	Y	Q	Y	Y	N	Y	Y	Y	Y
Utah.....	D	N	Y	Q	D	N	D	N	Y
Vermont (R).....	Intangibles of nonresident decedents not taxed.								
Virginia.....	Y	N	Y	Y	N	N	Y	Y	Y
Washington.....	Y	Y	Y	Y	N	N	Y	Y	Y
West Virginia.....	Y	N	Y	N	N	N	Y	Y	N
Wisconsin.....	N	N	N	N	N	N	N	N	N
Wyoming.....	N	N	N	N	N	N	Y	Y	Y

Symbols.—A = Physically located in state. B = Physically located outside of state. D = Doubtful.
Q = Answer qualified. Y = Taxed. N = Not taxed.
* From "Prentice-Hall Inheritance Tax Service," published by Prentice-Hall, Inc., 70 Fifth Ave., New York.

† If unregistered, no. † Unless secured by mortgage of real estate within the state.
(R) One of the group of reciprocal states.

¹ Taxes no intangibles of nonresident decedents except stock of Kentucky corporations.

² Reciprocal July 1, 1928.

³ Executors' commission tax imposed on municipal or state bonds, or stocks of financial insurance or utility corporations.

⁴ Reciprocal December 1, 1925; no tax on intangibles of nonresidents dying on or after December 1, 1926.

⁵ No provision for collecting tax on estates of nonresident decedents unless local probate is necessary.

Multiple inheritance taxation.—One of the great difficulties about state inheritance taxation is that it leads to multiple levies. While there is no constitutional provision against double or multiple taxation, the principle is not approved generally and investors are justified in arranging their estates that they may, so far as possible, be taxable by one jurisdiction only. We must examine, therefore, how double or multiple state taxation can be avoided. The following rules have been promulgated by several trust companies:

1. Exchange securities that you find are taxable in jurisdictions other than your state of residence, for securities of equal merit that will not be taxable by any jurisdiction other than your state of residence and the Federal government.
2. Organize a holding company in a state that does not tax the transfer of shares held by a nonresident decedent.

This rule perhaps needs explanation. It has been held by the Supreme Court of the United States that a state may not tax the stock of a foreign corporation merely because that corporation owns property in the state. If, therefore, *X* owns stock of a corporation, *Y*, organized in state *A*, and the latter owns stock of a corporation, *Z*, of state *B*, upon *X*'s death, *B* could not tax the stock of *Y* merely because it owned the stock of *Z*. In other words, state *B* cannot go back of company *Y* and the company does not die. Many large estates in this country and in England are "incorporated" to avoid multiple taxation. Since Delaware does not tax the stock of domestic corporations held by nonresidents, Delaware is a favorite state for incorporating such companies.

3. Transfer part of your property through the creation of an irrevocable trust; the gift is not taxable under the present Federal estate tax law, unless it is made within two years of death.

If the gift in trust is nonrevocable, the donor does not relinquish anything at death except the income that he retained, which income, of course, passes to another at his death. Thus, if *A* had five children, he might give in trust to each a vested one-sixth interest in his estate immediately retaining for himself a like interest, but provide that each child should not begin to enjoy his income till he reached 21 years of age. Upon *A*'s death, his children, before they reached the age of 21 years,

could live on the income of their respective interests in the one-sixth that had been retained by *A* for life, but that would now pass to his children under the terms of the trust. Only one-sixth of *A*'s estate would be taxable under the succession taxes.

4. Be careful that your securities and other intangible property are economically kept. In many states such property is taxable only if located therein; removal from such places may save a tax.¹⁰

5. Wherever possible, make your life insurance payable to a named beneficiary rather than to your estate.

Under the Federal estate tax the proceeds of insurance payable to the estate is taxable and so is all insurance in excess of \$40,000 payable to named beneficiaries. The states usually do not tax the proceeds of insurance payable to named beneficiaries.

6. After putting your estate in order so that a minimum inheritance and estate tax will be due, carry insurance to cover the inheritance taxes and other expenses that will arise when your estate passes into the hands of your executor.

Successful men keep their money well invested. When they die, relatively small amounts of cash are found in their estates. Usually the succession taxes are required to be paid within a year and this results in a demand for cash to be obtained from the sale of securities. The baneful effects of this procedure have been pictured by Mr. Andrew Mellon, Secretary of the Treasury:

It has become notorious in recent years, whenever a man of means dies, leaving his estate obligated to pay a large amount by way of taxes or debts, or both, that there is an immediate decline in all classes of securities in which he is known to be interested. And when the estate is required to make a sale of its property there is not merely a large loss to the estate, but there is also a loss inflicted on everyone else interested in these properties, especially if at the same time they desire to, or must, sell.

The proper way to avoid this difficulty is through insurance. Rodman Wanamaker, for example, whose estate was estimated at \$75,000,000, was said to carry \$7,500,000 insurance.

¹⁰ See table on p. 781.

7. To the above rules may be added this: Choose a favorable state in which to reside. While the Federal estate tax remains and allows an 80 per cent credit for state taxes, this rule is of little effect, but it would become important if that tax were removed. Florida, for example, would become a haven for wealthy persons.

How succession taxes are calculated.—One who is to be engaged in investing as a profession must know how to calculate succession taxes. Such a person must become familiar with the use of an inheritance tax service that will give up-to-the-minute information.¹¹ Here we have space only for indicating the process of calculation in a general way. The Federal estate tax is computed by subtracting from the gross estate all debts and a specific exemption of \$100,000 and applying the rates shown in the table on page 778. After the state taxes are computed, a credit against the Federal tax may be taken, not in excess of 80 per cent of the Federal tax.

The inheritance tax in the state of residence may be calculated by finding the net share going to each beneficiary and then applying the graduated rates provided in the law for taxing persons in the several degrees of consanguinity, always making allowances for specific exemptions if any are granted. Thus, if a net share of \$100,000 each were payable to a daughter and to an aunt of a resident of Illinois, and another \$100,000 were payable to a friend who was a stranger in blood, the resulting tax would be calculated as follows:

	<i>Exemption</i>	<i>First \$20,000</i>	<i>Next \$30,000</i>	<i>Next \$20,000</i>	<i>Remainder</i>
Daughter	\$10,000	2% (\$400)	2% (\$600)	4% (\$800)	4% (\$800)
Aunt ...	500	6% (\$1,200)	8% (\$2,400)	8% (\$1,600)	12% (\$3,060)
Stranger	100	10% (\$2,000)	12% (\$3,600)	16% (\$3,200)	16% (\$4,784)

The daughter would pay an aggregate tax of \$2,600; the aunt, \$8,260; and the stranger, \$13,584.

The same estate may consist of securities of corporations incorporated in many states. The first step in calculating such "foreign" taxes would be to find where the corporations are located and then to see if such states taxed the securities. This latter step could be ascertained from the material already given

¹¹ See the Prentice-Hall Inheritance Tax Service. The introduction explains in detail how the taxes are accurately computed and gives all the information necessary for the computation.

(see pp. 781). Then the taxes for each state would be calculated in much the same way that the Illinois tax was calculated for the resident estate, though many of the states have peculiar methods of taxing foreign estates. When all the state taxes were calculated, they would be added and the total would be subtracted from the Federal tax to the extent that the aggregate did not exceed 80 per cent of the Federal tax.

Some social consequences of inheritance taxation.—This is not the place to discuss the economic and social effects and bases of inheritance taxation. But a few observations reasonably may be made. Succession taxation tends to be either a means of producing revenue or a means of causing the social distribution of wealth. If revenue is the only object, then the basis of the tax may be either the protection that wealth receives or the ability of persons to pay the tax. Either basis justifies a reasonable progression of rates relative to the amount of property transmitted or received. If, however, the higher rates, or brackets as they are called, become too burdensome, the inducement to evasion becomes very great and even some migration of wealth and persons may be expected from areas of high taxation to jurisdictions of low taxation. Some persons have claimed that the tax tends to discourage the production or accumulation of wealth; the most that can be said on this subject is that no statistical study has been made that supports the theory. Men go on accumulating for the "fun of the game."

If social distribution is attempted, as it has in practice been urged, the results might be disastrous, if, indeed, such distribution could be made effective. Wealth tends to gravitate to the hands of persons who can best use it for the social good. The economic forces that work in this direction are undoubtedly more effective than would be any artificial forces such as high succession taxes.

Security issue and transfer taxes.—Practically all states require from a corporation about to be organized a tax in proportion to the capitalization. No further tax is called for when the stock is issued. But the United States does tax the issuance of stock.¹² These taxes ordinarily have no significance for the investor, though they are important to the corporation.

¹² The Federal government also taxes the issuance of bonds at the rate of 5c. per \$100.

New York, Massachusetts, Pennsylvania, and South Carolina, besides the Federal government, tax transfers of stock at the rate of 2 cents per \$100 face value (South Carolina 4 cents). In each case shares without par value are taxable practically as though they had a par value of \$100. The important point for the investor to keep in mind is to make no unnecessary transfers that may involve a tax. Under the Federal rules, "where stock is transferred from the name of the decedent to the estate of the decedent, thus, From 'John Doe' to 'Estate of John Doe, deceased,'" the transfer is taxable; but "where stock is transferred from the name of the decedent, to the executor of the decedent's estate, thus, From 'John Doe' to 'Richard Roe, Executor of the Estate of John Doe, deceased,'" the transfer is not taxable.¹³

General property taxes.—The general property tax in its widest form includes all personal property, tangible, as well as intangible. Thus intangibles are put on the same footing as tangibles. Unquestionably the general property tax is one of the most unscientific of all taxes. Not only does it result in all sorts of double taxation, but it also causes a definite attempt to conceal taxable intangibles. And not without good reason. Let us suppose that the general property tax in a given locality is \$25 per thousand, a rate that is not unusual. At this rate a 5 per cent bond selling at par, if properly taxed, would yield only 2½ per cent. The rates generally imposed on tangibles are in many cases prohibitory if applied to intangibles.

Classified property taxes.—A partial solution of this situation is attempted in some states by a so-called classified property tax. That is, property is divided into two classes, tangible and intangible, and a higher rate of tax is imposed on tangibles than on intangibles. While the practical reason for such a distinction lies in the fact that the low rate of tax is an inducement to declare the property for tax purposes, there is an economic reason as well. The taxation of tangible property in the state where it is located is not, *per se*, subject to criticism. But, where evidences of ownership in tangible property or equities therein are also taxed, there is unquestionably double taxation. On the theory that some additional government functions are required by the existence of complex evidences of

¹³ For the rules see the various tax services of Prentice-Hall, Inc., 70 Fifth Ave., New York.

ownership in tangible property, the addition of a low tax rate on such evidences, even though double taxation does result, is justified. Among the states making such distinction are California, Connecticut, Minnesota, Rhode Island, Pennsylvania, and Virginia. The so-called Pennsylvania 4 mill tax exemplifies this distinction. Under this tax, tangibles are subject to the higher rates, varying with the community, whereas certain intangibles, including stocks and bonds of corporations, are taxed at the rate of \$4 a thousand.¹⁴

In much the same way that some bonds contain a so-called tax-free covenant, whereby the issuing corporation agrees to pay the normal Federal income tax up to 2 or 4 per cent, other

¹⁴ **Pennsylvania 4 Mill Tax.**—The Assembly of the state in 1913 passed an act designed to provide revenue through the assessment of an annual tax at the rate of 4 mills for each dollar of value on certain classes of personal property. The tax applies, *inter alia*, to certain securities owned by residents of the state of Pennsylvania. The state naturally goes to the source wherever possible to collect this tax, but if it cannot be collected at the source, the act provides for payment by the owner of the security. The value at which securities should be reported for taxation is the market value, not the par value. No tax is assessed under this act against bonds, notes, etc., issued by the United States government, or by the state of Pennsylvania. In a comparatively few cases, the bonds issued by the counties, cities, boroughs, townships, school districts, or incorporated districts of Pennsylvania need not be reported for taxation under this act. In the case of bonds, notes, and other evidences of debt issued by a corporation of the state of Pennsylvania, the tax is paid by the corporation direct to the state. Certain corporations of other states, registered to do business in the state of Pennsylvania and actually doing business in the state, whose treasurers are residents of the state, pay the tax direct and their securities need not be reported for taxation under this law. Certain bonds issued by a Pennsylvania corporation under indentures which do not contain a clause providing that interest be paid without tax deduction are not to be reported for taxation, since the amount of the tax is deducted from the interest payments. Residents of Pennsylvania who are taxable under this law are required to pay the 4 mills tax to the county on all stocks, bonds, notes, etc., except as noted above. Many corporations of other states, in order to make their securities attractive to residents of Pennsylvania, have agreed to refund the tax, if application is made in accordance with the conditions prescribed.

In California the tax on intangibles amounts approximately to \$2.80 per \$1,000. In Rhode Island the rate is \$4 per \$1,000, and in Connecticut the same.

In the case of states having a classified property tax, it is necessary for the investor to ascertain in detail the types of securities that are taxable and those that are exempt. Obligations of the Federal government are always exempt. The same applies to instrumentalities thereof. Usually the stocks and bonds of domestic corporations are exempt, on the ground that they are already taxed. Securities of corporations located outside the state are usually taxable. Local municipal bonds and state bonds are usually exempt, although not necessarily so. In Rhode Island local municipal bonds are taxable. The obligations of other states and their municipalities may or may not be taxed.

securities contain covenants in which the issuing company agrees to pay, under certain conditions, the intangible property tax just referred to. As an example, let us consider the following paragraph taken from the indenture under which the $5\frac{1}{2}$ per cent Collateral Trust Bonds of the Mortgage Company of Maryland were issued. In this indenture the company "agrees to refund state, county, and city personal taxes up to $\frac{1}{2}$ of 1 per cent in whatever state held (provided written application for such reimbursement be made within ten months after the due date of any such tax and within two months after its payment), and also to pay interest without deduction of the normal Federal income tax up to 2 per cent." It will be observed in this connection that such repayment is promised only when notice is given that the payment has been made by the investor and then only when demand is made therefor on the company in due form.¹⁵

In the case of small investors, it is rarely necessary for companies making such agreements actually to make the refund, for it is not always customary for small investors to return their intangibles for tax purposes, even in states where the 4 or 5 mill rate is in force. In many such states failure to make a return is not punishable, but simply means that the individual will be required to pay a tax on whatever amount the tax officials care to return for him. In many cases no return at all is made.

The 4 mill tax, however, has a definite effect on the investment policies of an estate so large that a return is required. Thus, in Rhode Island, State of Rhode Island Bonds are exempt from this tax, as are instrumentalities of the Federal government. Municipal issues may be taxed, however, regardless of whether or not they are located within the state. Thus, a 4 per cent municipal bond, selling at par, will net only 3.6 per cent to the investor who makes a declaration. If State of

¹⁵ The following is taken from the circular announcing the 6% Gold Bonds of 1943 of the Cities Service Gas Pipeline Company:

"The Company will agree to reimburse resident holders of these bonds upon proper request within 60 days after payment, for the Pennsylvania and Connecticut personal taxes not in excess of 4 mills per annum on the taxable value; the California personal property tax not in excess of 5 mills per annum on the taxable value; the Maryland securities tax not in excess of $4\frac{1}{2}$ mills per annum on the taxable value; the Virginia personal property tax not in excess of $5\frac{1}{2}$ mills per annum on the taxable value; and for the Massachusetts income tax on the interest not exceeding 6% thereof per annum."

Rhode Island Bonds are selling on a higher than a 3.60 basis, then they afford a better yield to such an estate than municipal issues selling to yield 4 per cent. Similarly, in the case of taxable corporation bonds, the investor must figure the effect, not only of the income tax but of the local property tax and the state income tax, when making his selections.

A further problem is created for the investor on account of the diversity of practice among different states in interpreting the general property tax. In the case of real estate the question is not difficult, for the established rule is that this is taxable only in and by the state in which it is located, and cannot be taxed by any other government.

The entire subject regarding the taxation of intangibles, however, is very complex and is not susceptible to general rules, although the following paragraphs, taken from a Report by the Committee on Double Taxation and Situs for the Purposes of Taxation of the National Association, will give the reader as good a résumé of present practices as is possible.¹⁶

Intangible personal property is subject to taxation at the domicile of its owner. Whether such intangible personal property is subject to taxation at the domicile of its owner when it has acquired an independent situs for taxation in another jurisdiction is uncertain. The current opinion seems to be that it is. The contrary view, however, has been suggested, and it is not impossible that the rule applicable to tangible personal property may be extended to intangible personal property. (Cf. *Hawley v. Malden*, 232 U. S. 1, 12. *Liverpool, etc., Ins. Co. v. Orleans Assessors*, 221 U. S. 346, 354.) In the cases in which taxation of such property in two jurisdictions has been sustained, the property subject to taxation at the domicile of its owner has been considered to be different from that subject to taxation in the other jurisdiction, i.e., in the case of a mortgage or real estate the debt is subject to taxation at the domicile (*Kirtland v. Hotchkiss*, 100 U. S. 401); the interest in real estate where the land lies (*Savings Society v. Multnomah County*, 169 U. S. 421); in the case of shares of stock the shares are subject to taxation at the domicile; the corporate property, where such property is located or where the corporation is incorporated. (*Hawley v. Malden*, *supra*, p. 9.) Shares of stock may be made subject to taxation in the state of incorporation (*Corry v. Baltimore*, 196 U. S. 466); whether they may be made subject to taxation both there and at the domicile of the owner, *quære*. (*Hawley v. Malden*, *supra*.)

¹⁶ National Tax Association, "Proceedings of the Ninth Annual Conference," 1915, pp. 369-371.

Intangible personal property may acquire a situs for purposes of taxation independent of the domicile of its owner. The law upon this point must be separately stated for different forms of intangible personal property.

a. Coin is subject to taxation in the jurisdiction in which it is permanently located. (It is, of course, tangible rather than intangible personal property.)

b. Bank bills, though strictly merely evidences of indebtedness, are by analogy to coin subject to taxation in the jurisdiction in which they are permanently located. (*New Orleans v. Stempel*, 175 U. S. 309, 322.)

c. Deposits in bank. The theoretical relation between a bank and depositor therein is that of debtor and creditor. There are intimations, however, that by reason of the practical similarity of deposits in bank to money in pocket such deposits are subject to the same rules as to situs for taxation—i.e., that bank deposits are subject to taxation in the jurisdiction in which they are permanently located, that is, in the jurisdiction in which the bank is located. (*Blackstone v. Miller*, 188 U. S. 189, 205. Cf. *Pyle v. Brennenman*, 122 Fed. 787.) Even if they are treated simply as credits, there is reason for the view that they are subject to taxation in the jurisdiction in which the bank is located. (See *infra*, “*d.*”)

d. Credits not evidenced by or incorporated in written instruments—i.e., open accounts—are subject to inheritance taxation in the jurisdiction in which the debtor is domiciled on the theory that the state of his domicile has control of the ordinary means of enforcement. (*Blackstone v. Miller*, *supra*.) Whether this is true of property taxation has not been settled. (See, however *Liverpool, etc., Ins. Co. v. Orleans Assessors*, *supra*, p. 354.) In view of the latter cases the decision in *State Tax on Foreign Held Bonds*, 15 Wall. 300, cannot be said to be a final disposition of this question.

e. Whatever may be the law as to whether an ordinary credit not evidenced by or incorporated in a written instrument—i.e., an open account—is subject to taxation in the jurisdiction in which the debtor is domiciled, it is settled that a series of such credits arising from business transacted in such jurisdiction is subject to taxation in that jurisdiction. (*Liverpool, etc., Ins. Co. v. Orleans Assessors*, *supra*.) This is the so-called “business situs” doctrine. It implies the existence of a business of some degree of permanence. This doctrine has been held applicable to credits evidenced by written instruments, whether or not such written instruments are within the taxing jurisdiction. (*New Orleans v. Stempel*, *supra*. *Metropolitan Life Ins. Co. v. Orleans*, 205 U. S. 395.)

f. State and municipal bonds are subject to taxation in the jurisdiction in which they are permanently located. (See *New Orleans v. Stempel*, *supra*, p. 322. *Buck v. Beach*, 206 U.S. 392, 407.)

g. Promissory notes are subject to inheritance taxation in the jurisdiction in which they are permanently located. But in the opinion of a majority of the United States Supreme Court such permanent location alone does not give jurisdiction for purposes of local taxation. (*Wheeler v. New York*, 233 U.S. 434. *Buck v. Beach*, *supra*, p. 393.) It seems, therefore, that promissory notes are subject to the same rules, as respects local taxation, as are ordinary credits—i.e., open accounts.

h. Bonds, being specialties, are subject to taxation in the jurisdiction in which they are permanently located (*Holmes, J., in Selliger v. Kentucky*, 213 U.S. 200, 204). How far the decision in *State Tax on Foreign Held Bonds*, *supra*, as limited by later decisions establishes the proposition that such bonds are not subject to taxation in the jurisdiction in which the debtor is domiciled is not clear. It is possible that even if an ordinary credit or promissory note is subject to taxation in the jurisdiction in which the debtor is domiciled, a bond—being considered the thing itself—is subject to a different rule. (See *Blackstone v. Miller*, *supra*, p. 205.)

i. Mortgages are subject to taxation in the jurisdiction in which the land lies on the theory that the tax is imposed upon the mortgagee's interest in the real estate. So far as has yet been decided, the note or bond secured by such mortgage is subject to the same rules of taxation as an unsecured note or bond. (See *supra*, 2 and 3, *g* and *h*.)

j. Corporate stock. Shares of stock in corporations organized under state laws may be given a situs for the purpose of taxation within the state of incorporation. (*Corry v. Baltimore*, *supra*.) It is undecided whether under these circumstances such shares of stock may also be taxed at the domicile of the owner.

k. Shares of stock in National Banks are by Federal statute subject to taxation only in the state in which such banks are located.

Summary.—Detailed consideration of the economic effects of our various systems of taxation is hardly a subject for the present work. The entire problem of taxation is an intricate one and properly belongs to a study of public finance. We have tried to consider only the more important relations of taxation to the subject of investment.

As to the future course of taxation, one can hazard only a rough guess. In all probability, coming years will witness a gradual lowering of Federal income taxes, while state taxes will remain at the present level or increase. More satisfactory, of course, would be a reduction in all taxes. The income tax unquestionably has come to stay, and probably will be increasingly used by states as a means of revenue, in place of property taxes.

CHAPTER XXX

INVESTMENTS AND THE BUSINESS CYCLE— INTRODUCTORY

Corporate profits, movements in stock prices dependent on.—It is commonplace knowledge that movements in the prices of various groups of securities are closely related to economic conditions. Common stocks represent ownership in enterprises, and, as such, they share in the profits thereof. The dividend policy of a corporation depends very largely on its earnings. It is but natural, therefore, when profits are large, and dividend prospects bright, that the common stocks of corporations should advance in price. Conversely, when profits fall off, or when deficits occur, the market value of stocks declines.

Corporate earnings.—Corporate earnings are determined in part by factors of management, to be sure; but they are also dependent in part on the state of business activity at any given time. For instance, the direction of commodity price movements is very important in determining the profits of *industrial* concerns.¹ Periods of rising prices are particularly favorable to such concerns. Not only does a generally satisfactory state of business usually accompany rising prices, but, at such times, industrial concerns receive profits from advances in the values of their inventories; and it frequently happens that the prices of commodities advance more rapidly than wages. Furthermore, corporations almost invariably are borrowers, and, as such, profit during periods of rising prices. Conversely, falling prices generally mean lessened profits.

State of employment.—The general state of employment is another factor affecting corporate profits. When employment is at a high level, purchasing power is high, with the result that the demand for consumption goods is heavy. More auto-

¹ The effect of rising prices on public utility and railroad stocks is further discussed on p. 841.

mobiles, homes, clothing, and other consumers' goods are purchased. This, in turn, creates a greater demand for steel, wool, iron, coal, lumber, and other raw materials. Similarly, railroads and many so-called public utility enterprises enjoy an increased demand for their services at such times. In fact, sales of the general run of corporations are affected by the extent to which industrial workers are satisfactorily employed.

Agricultural conditions.—In a somewhat similar manner, the status of agricultural industry affects corporate profits. There are many who believe that general business conditions of this country are largely dependent on the size of its crops. This argument is based on the assumption that a large part of the population is engaged in agriculture, that good crops enhance the purchasing power of such individuals, and, hence, furnish the *raison d'être* for good business. This view is subject, at least, to the modification that the size of crops alone is of no great significance; but that the size, multiplied by the price at which they can be sold, is the real measure of agricultural prosperity.

While there is probably a certain amount of truth in the idea that a large income for agricultural workers does stimulate business, and vice versa, one should not assume that the condition of agricultural industry is the sole determinant as to whether general business conditions will be good or bad. It is one factor, however, among others, that has an important bearing on the state of activity.

Movement of goods and production in basic industries.—

It may be said, in short, that all those factors which tend to stimulate the movement of goods in distributive channels and to increase production in basic industries are favorable to corporate profits. Contrariwise, when goods fail to move, orders from retailers to wholesalers decline, wholesalers and jobbers cancel existing orders with manufacturers and withhold forward orders, manufacturing output declines, unemployment increases, and profits decline.

Interest rates and credit conditions.—Credit is the very foundation of modern business. As we have already seen, there are two kinds of borrowing operations carried on by business concerns. Long term borrowing is undertaken to finance the acquisition of permanent assets and improvements. Current operations, on the other hand, are provided for by

means of bank loans. A direct relationship is, therefore, created between the state of bank credit, interest rates, and the extent to which current operations can be expanded. Given a situation where prices are advancing and business is active and it becomes necessary for business men to borrow more heavily at banks. If the resources of the banks are ample, and if interest rates are low, such borrowing is profitable and is encouraged. Conversely, lack of sufficient loanable funds and high interest rates discourage expansion and hence affect profits.

Bank credit is also used indirectly to finance permanent improvements. When the investment banker or individual investor purchases securities and borrows against such collateral at his bank, the effect is to divert bank credit into permanent financing. Extensions to present plants and the erection of new plants depend partly on the availability of capital. Ample credit facilities at banks and low interest rates encourage investment bankers and business men to buy securities with borrowed money, thus giving business corporations the funds with which to expand their plant facilities. Similarly, low interest rates encourage the use of borrowed capital for speculation in both stocks and bonds. High interest rates, on the other hand, increase the cost of borrowed capital and check borrowing operations. This, in turn, discourages expansion on the part of business concerns both in respect to current operations and plant development. Speculation in securities and commodities is likewise curtailed.

Bond prices, movement of, in sympathy with interest rates.—Bonds, as distinct from stocks, are credit instruments and bear fixed rates of interest. The yield of a given bond depends on three factors: the price at which it sells; the length of time it has to run to maturity; and its coupon rate of interest. At any given time, the *yield* on a given bond varies inversely with its price. Since the purchase of bonds is only one form of employing funds, it is logical that the interest return on such instruments should approximate that available in other channels. Consequently, bond prices move inversely with money rates. As money rates advance bond prices decline and vice versa.

For this reason, the purchaser of bonds is required to pay very close attention to the state of business activity and to the supply of loanable funds. As business expands we have seen

that increasing demands are placed on banks, for the purpose of financing current operations as well as for making permanent investments. The supply of loanable funds as reflected by bank reserves dwindles and interest rates sooner or later advance. This movement is reflected in declining bond prices. Similarly, during periods of liquidation and depression, bank reserves increase, interest rates decline, and this is followed by an upward movement in bond prices.²

Interpretation of business indices.—In view of the close relationship between business conditions and security prices, the successful investor is required to keep in the closest touch with changes in the economic and business situation. This can be done only by an intimate study of a substantial body of statistical data which are currently available. Such a study requires, not only the ability properly to interpret the available material, but knowledge as to its sources as well.

Unquestionably the student who has had statistical training is in a better position to deal with the various series and curves that are commonly used to measure business conditions than is the student who lacks such training. It is quite impossible to go into an elaborate discussion here of the technique used by statisticians in preparing and analyzing their material. We shall, however, call attention briefly to several concepts, an understanding of which is quite essential to any intelligent interpretation of the more commonly published data on business conditions.

Definition of time series.—Most series used in measuring business and economic conditions are known as "time series." In nontechnical language, a "time series" may be defined as a consecutive series of data representing, for a stated period, the quantitative changes that take place in respect to some definite factor. Thus, the amount of pig iron produced monthly over a given period constitutes a time series. There are two ideas involved here—quantity and time. Other examples are: "The weekly volume of bank debits," "Population data at two or more consecutive dates," "The monthly volume of new buildings contracts awarded," and so on.

Seasonal variation.—The original or crude data of a time series may be put in the form of a schedule, or they may be

² For further discussion of behavior of bond prices during phases of the business cycle see p. 844.

represented in graphic form by means of a curve. Regardless of the particular form of presentation, the so-called raw data frequently require statistical treatment before they assume practical significance. In the first place, many time series are subject to seasonal variation. Consider, for a moment, such a series as department store sales. We all know, from common knowledge, that the sales of such stores are low during the summer months, rapidly reach a peak in December, decline rapidly in January, and rise slightly during the spring months. It is not indicative of a great period of prosperity if such sales increase in October, November, and December as compared with July, August, and September. It might mean something if they increased *more than usual* during such months. Similarly, a decline in January and February need not indicate a period of depression in retail trade. In fact, if such a decline is *less than usual*, conditions may be considered as good. By means of certain mathematical formulas, it is possible to adjust time series for seasonal variation. In this way a curve plotted from the corrected data would be a straight line if each month or week (depending on the period used) showed just the normal seasonal variation. Where the variation from month to month is greater or less than normal, then the curve varies to that extent from a straight line.³ Figure 37, which shows the Federal Reserve Board index of department store sales, unadjusted and adjusted for seasonal variation, illustrates the preceding ideas.

Secular trend.—Secular trend may be defined as “the regular increase or decrease of the series according to some principle, over the whole period under consideration. For most series it is a growth element, dependent upon population and the development of industry.”⁴ Let us consider such a series as pig iron production in the United States during the past quarter century. Not only is it reasonable to expect seasonal variations in the average monthly data, but the average production during a poor year at present would probably be in excess of the average production of an especially active

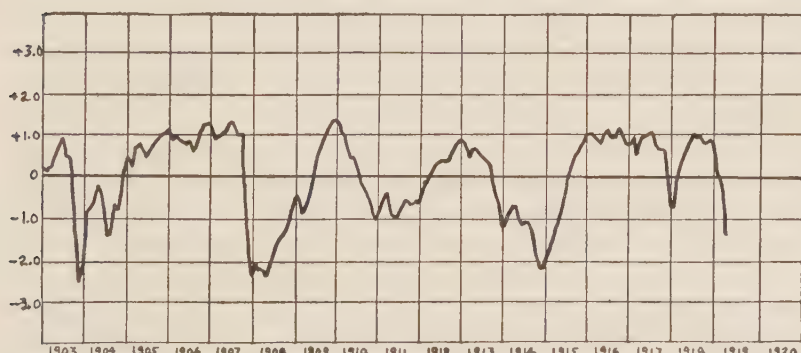
³ For the mathematics involved in eliminating seasonal variation the student is referred to any standard text on Elementary Statistics. A particularly good discussion with illustrative material appears in *The Review of Economic Statistics*, Preliminary Volume 1, p. 18 ff.

⁴ Persons, Warren, “A Nontechnical Explanation of the Index of General Business Conditions,” *Review of Economic Statistics*, Preliminary Vol. 2, p. 39.

year during the first part of the period. As our industrial development has proceeded with the growth in population and wealth, the trend in pig iron production has necessarily been upward and fluctuations to-day are within a higher range than they were twenty-five years ago. In order to make our raw data still more significant, therefore, it is necessary to eliminate secular trend.

Analysis of cyclical movements.—Having so eliminated secular trend and corrected a given series for seasonal variation, we are then able to determine what is known as cyclical movements in the series. Cycles may be defined as “the undulating curves, or numerical values, secured by removing from the actual items the secular trend and seasonal variation, and expressing the results in terms of comparable units. The actual figures thus corrected and expressed measure the rhythmic movement of business, the ebb and flow corresponding to depression and prosperity.”⁵ The following chart illustrates the results of applying these correctives to monthly averages of pig iron production in the United States from 1903 to 1920. In this chart, both seasonal variation and secular trend have been eliminated and the resulting curve shows the cyclical variations above and below the line of trend.⁶

Fig. 29.—Monthly Tonnage of Pig Iron Produced in the United States, Cycles.



Review of Economic Statistics, Preliminary, Vol. II, p. 42.

Combination of separate time series into one series.—A time series which is composed of a number of different items is often more useful than a series representing movements in

⁵ *Ibid.*, p. 39.

⁶ *Ibid.*, p. 42.

one item alone. Suppose, for example, that one wanted an index of industrial production and needed something more inclusive than a single basic series, such as pig iron production. To obtain such an index, it might be necessary to combine figures of production of many dissimilar commodities. Obviously, it would not be reasonable to add together the monthly productions of tons of pig iron, bales of cotton, and pairs of shoes. The raw figures of production must be reduced to some common unit and must be included in the final series in proportion to their relative industrial importance if the index is to be most useful. There are several different statistical methods of constructing these composite indexes.⁷ In many cases, it is necessary to correct each series separately for seasonal variation and secular trend before they can be combined into one. A number of the indexes to be discussed have been formed by combining many individual series.

More important series for measuring business conditions.—With this simple statement regarding the use of time series in the measurement of business conditions, we may pass on to a brief consideration of some of the more important series at present used to measure changes in business and economic conditions. Although, in some cases, sources of raw data are referred to, the attempt has been made to confine most of the discussion to secondary sources of material; that is, to statistical services, where the raw data have already been treated and are presented in usable form. This is believed desirable, for our present interest is in the actual measurement of conditions rather than in their purely statistical aspects. Various statistical series currently available are discussed under the major headings: Production indexes; Employment indexes; Indexes of trade and business activity; Price indexes; Building construction; Railway transportation; Business failures; and Banking and finance. Discussion of these indexes is merely descriptive. No effort is made at this stage to analyze the cyclical movements appearing in the various series referred to, nor to consider the correlation between movements in such series and security price movements. Subsequently, attention

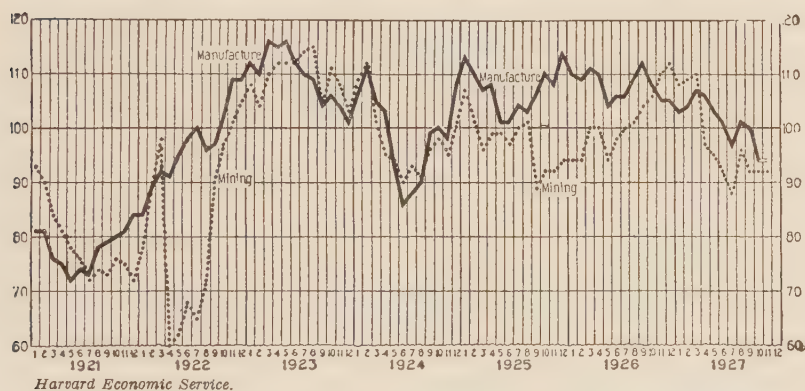
⁷ See Mills, F. C., "Statistical Methods," Chapter IX, 1924, Henry Holt & Co., New York, and other standard books on business statistics.

will be given to the Business Cycle, and to the characteristic movement of securities during its various phases.

Production indexes.—The most widely known and used indexes of production include the following:

1. *The "Harvard Index of the Volume of Manufacture."*¹—This appears once a month in the *Weekly Letters* of the *Harvard Economic Service*. This index is based on approximately 30 series, representing such broad divisions of industry as the following: metals, vehicles, food products, lumber, paper and printing, chemicals and allied products, leather and shoes, stone and clay products, and tobacco products. This index first appeared during September, 1921, and was revised in

Fig. 30.—Indexes of the Volume of Manufacture and Mining.



March, 1922.⁸ Minor revisions only have been made since that time.

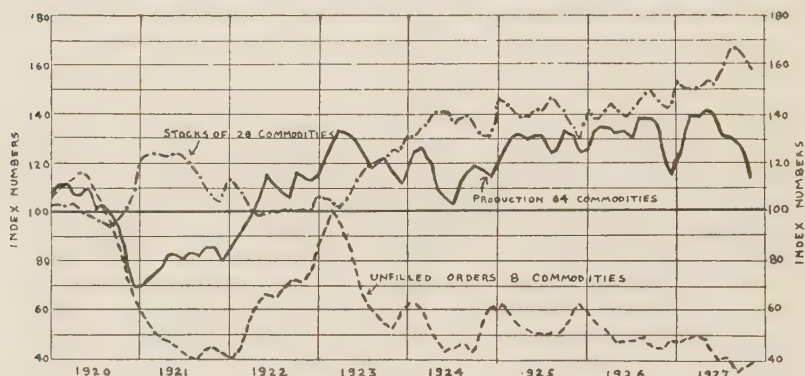
2. *"Survey of Current Business" Indexes of Business Activity.*—These indexes comprise three separate series. One based on the production of 64 manufactured commodities; another, on the stocks on hand of 28 commodities; and the third, on unfilled orders of eight commodities. The production curve represents about 44 per cent of the entire manufacturing output of the country.⁹ At present, the manufacturing series

⁸ *Weekly Letter*, March 25, 1922.

⁹ For individual series used and method of weighting, see "Survey of Current Business," January, 1923, pp. 22–26. See also January, 1924, p. 19, and January, 1925, p. 28, for subsequent revisions.

is adjusted for seasonal variation and referred to the monthly average of the year 1919¹⁰ as 100 per cent. The curve representing stocks of goods on hand is a weighted index of commodities in the hands of manufacturers or in other visible hands at the end of each month based on 45 commodities.¹¹ These series are now corrected for seasonal variation and are compared with 1923-1925 as 100 per cent. Unfilled orders, on the other hand, consist of a weighted index of unfilled orders of manufacturers in the iron and steel and building indus-

Fig. 31.—Relative Production, Stocks, and Unfilled Orders for Manufactured Commodities.



1920 monthly average = 100. Adjustment has been made for both stocks and production for their respective seasonal movements. Unfilled orders are principally those of iron, steel, and building materials. November, 1927, is the latest month plotted.

tries at the end of each month, compared with the monthly average for 1920 as 100 per cent.¹²

3. *Federal Reserve Board: New Index of Industrial Production.*¹³—The new index of industrial production, which was first published in February, 1927, is made up of two com-

¹⁰ For purposes of constructing the chart, all three series are converted to a 1920 base, although the figures presented in the "Survey of Current Business" show production on a 1919 base and stocks and unfilled orders on a 1923-1925 base.

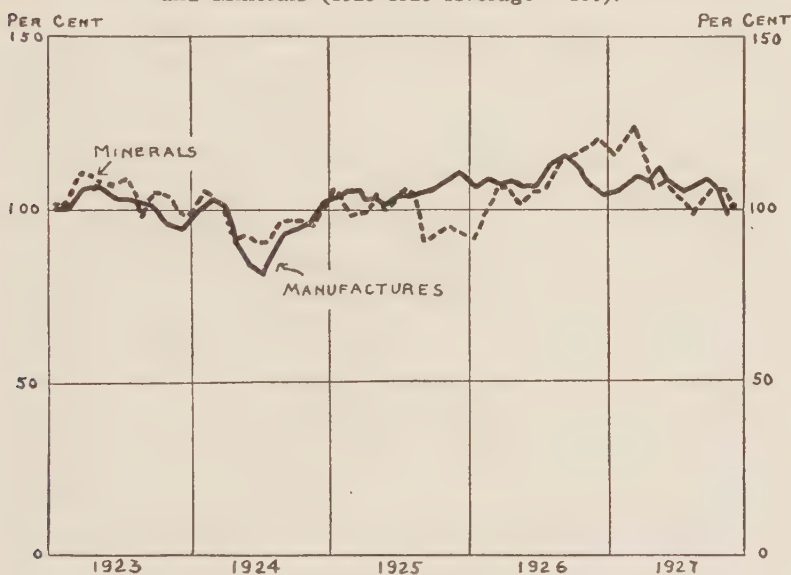
¹¹ For details see "Survey," May, 1923, pp. 20, 22, February, 1924, pp. 29-31, and April, 1924, p. 27.

¹² For details see "Survey," May, 1923, pp. 20-22.

¹³ See Federal Reserve *Bulletin*, December, 1922, pp. 1414-1421, for discussion of original index of production in basic industries. Revisions discussed in *Bulletin*, May, 1924, pp. 422, 423. New index explained in *Bulletin*, February, 1927, pp. 100-103, and March, 1927, pp. 170-177.

ponent indexes, one of manufactures, the other of minerals, and represents directly and indirectly nearly 80 per cent of the total industrial production of the United States. It is derived from 60 individual series, measuring production in 35 industries, and indirectly measuring production in many more. The base period of the new index number is the daily average production for the period from 1923 to 1925, inclusive. This index also represents the *average output per*

Fig. 32.—Federal Reserve Board Indices of Production of Manufactures and Minerals (1923–1925 Average = 100).

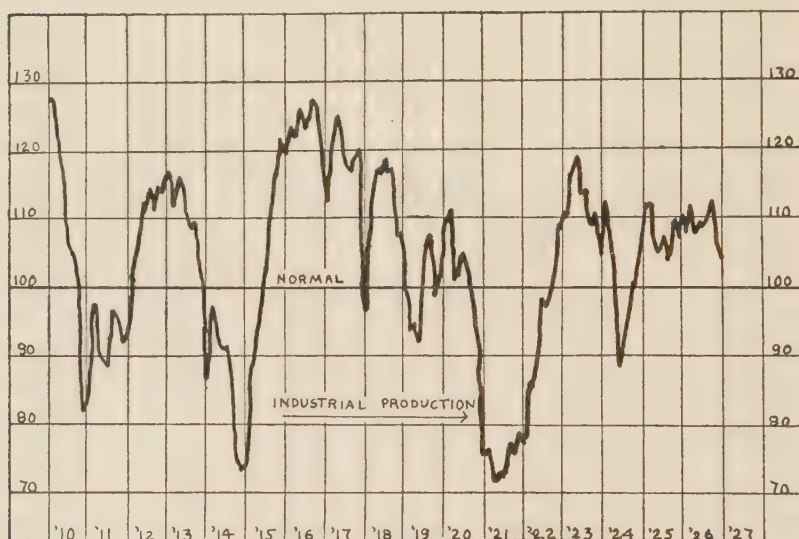


working day, rather than total production for the month, and thus is not influenced by changes in the number of Sundays and holidays during the month. The individual series are corrected for seasonal variation where necessary and weighted according to their importance as indicated by the census figures on value added in process of manufacture, in the case of manufactured goods, and annual output, in the case of minerals.

4. *Standard Statistics Company Index of Industrial Production.*—This index, first published in 1924, comprises 39 series of production data. It goes back as far as 1910 and hence is available for a longer period than any of the series.

Furthermore, all the constituent series are corrected for seasonal variation and secular trend. The chart in its final form, therefore, expresses current data as percentages of deviation from the secular trend line, or normal. In this respect, it differs from many other series which use some one year or group of years as the base and express subsequent data as percentages of such a period.

Fig. 33.—Standard Statistics Company Index of Industrial Production (Corrected for Seasonal Variation and Secular Trend; in Relatives, Secular Trend = 100).



There are other series indicating production activity that may be mentioned briefly at this time, but which will not be described. The Harvard Service publishes in its weekly letter service an index of mining activity.¹⁴ The Federal Reserve Bank of New York publishes in its "Monthly Review of Credit and Business Conditions" index figures expressing the volume of production in a number of mining and manufacturing industries. In January, 1925, the Babson Statistical Organization published, in preliminary form, a new index of the volume of production of nonagricultural raw materials.¹⁵

¹⁴ For a description see *Weekly Letter*, May 26, 1923, pp. 141-150.

¹⁵ See *Barometer Letter*, Jan. 6, 1925.

The statistical devices used in constructing the various indexes just described differ. The individual series making up the composite indexes likewise differ to some extent. Yet, on the whole, for the nontechnical reader, there is a marked similarity in the results shown by the different indexes. The reader will undoubtedly find a sufficiently accurate measurement of the current rate of industrial production in any of the standard series previously described to satisfy his ordinary requirements.

Iron, steel, and coal production.—The fact that iron and coal constitute the two most basic raw materials used in our present day industry makes their production records particularly significant as barometers of business activity. A few years ago, before business forecasting enjoyed its present vogue, pig iron production was regarded as the standard measure of business activity. The justification of this was that iron forms the basis of our steel industry, and that steel is devoted to a wide variety of uses. It is required for railway construction, the erection of buildings, the construction of machinery, and the manufacture of automobiles, as well as for the production of many other goods and services.

Statistics of pig iron production have always been readily available and are released promptly. They are first published in the *Iron Age* and the *Iron Trade Review*, but are reprinted immediately in all important business publications.¹⁶

Another series which has long been used as a business barometer is the record of monthly unfilled orders of the United States Steel Corporation. These data are available monthly as far back as 1910, but the quarterly series goes back as far as 1901. The current data are available in all literature dealing with business statistics.

The production of bituminous coal is a fairly good business indicator, although its efficiency is impaired by rather wide month to month variations, and frequent extreme fluctuations due to strikes and lockouts. Despite these handicaps, however, coal production must be regarded as an important indicator of business changes on account of the dependence of industry in general on the use of coal as a source of heat and

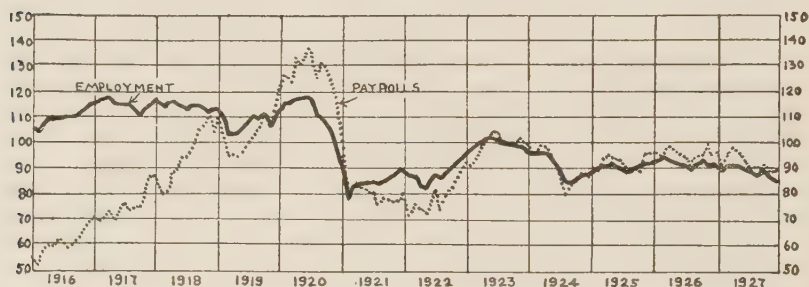
¹⁶ For a chart of pig iron production in the United States from 1903 to 1920 see p. 797.

power.¹⁷ Anthracite coal production, on the other hand, has little value as a business barometer.

Employment conditions and the labor market.—Closely allied with the state of productive activity is the extent to which labor is employed. The converse of a series representing the number employed would be one showing the number unemployed. In this country we have no satisfactory statistics of unemployment, although there are several standard indexes of employment.

1. *Bureau of Labor Statistics Index of Employment.*—The United States Bureau of Labor Statistics publishes an index of employment conditions which at present is based on reports from over 10,000 establishments, employing nearly

Fig. 34.—Bureau of Labor Statistics Indexes of Employment and Pay Rolls.



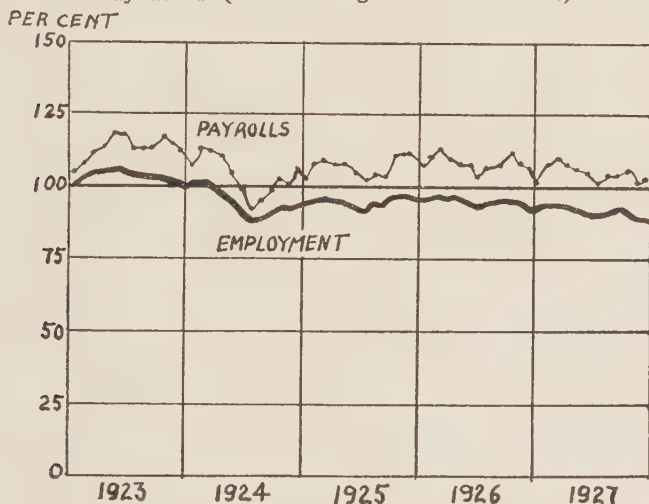
3,000,000 men. This index is computed by the "chain index" method. According to this method each month's data are expressed as a percentage of the previous month. The use of this method permits the number of establishments to vary from month to month, since each month's data are compared with that for the identical establishments of the previous month. The weights for the various lines of industry represented are determined by their relative importance in terms of wage earners. The method employed in preparing this index fails to account for the drift of employment from old to new concerns, or from industry into agriculture, or for the rise of new industries. In this way the index tends to be distorted

¹⁷ See "Fluctuations in Coal Production," by Wing and Tryon, in Persons, W. M.; Foster, W. T., and Hettinger, A. J., Jr., "The Problem of Business Forecasting," pp. 202-203, 1924, Houghton Mifflin Co., Boston and New York.

downward. The Bureau of Labor Statistics prepares also an index of pay rolls in much the same way as the employment index is prepared, using essentially the same data and system of weighting.¹⁸

2. *Federal Reserve Board Index of Factory Employment and Pay Rolls.*—The Federal Reserve Board utilizes statistics on employment compiled by various agencies, notably those of the Bureau of Labor Statistics, in the computation of its index. The essential difference between the Reserve Board's index and the preceding one lies in statistical methods em-

Fig. 35.—Federal Reserve Board Indices of Factory Employment and Pay Rolls (1919 Average = 100 Per Cent).



ployed. The number of industries included by the Board is 33 as compared with 54 in the former series. The year 1919 is used as the base year in the Board's index and a somewhat different system of weighting is used. By employing biennial census figures for checking its own figures with those furnished by the census of manufactures, some of the inaccuracies of the preceding series are eliminated. The Board also prepares an index of pay rolls based on the Bureau of Labor Statistics data.¹⁹

¹⁸ These indexes are published monthly, in the *Monthly Labor Review* and in small pamphlets entitled, "Employment in Selected Manufacturing Industries."

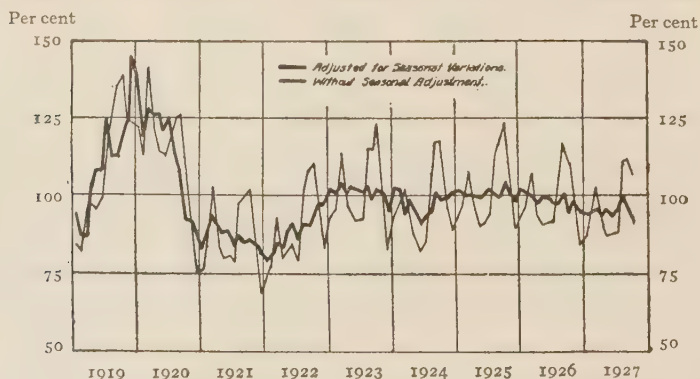
¹⁹ For a description of employment and pay-roll indexes, see *Federal Reserve Bulletin*, Vol. 11, May, 1925, pp. 324-327.

There are also several state indexes of employment and pay rolls. The most important of these is the "New York State Employment Index," which is one of the oldest continuous indexes in the United States. State employment series are maintained by Wisconsin, Massachusetts, Iowa, and several other states. The Federal Reserve Bank of Philadelphia also collects data concerning employment in Pennsylvania, New Jersey, and Delaware.

Indexes of trade and distribution.—That there should be a very close correlation between distribution and production is natural. That which is produced must eventually be sold. And, if distribution cannot be sufficiently maintained, then production must inevitably decline. Conversely, an active movement of goods in distributive channels stimulates the production of goods. In a way, therefore, distribution may be considered somewhat as the neck of the bottle. Satisfactory sales of consumers' goods, regardless of the cause, must sooner or later be reflected in greater productive activity. Corporate profits are, of course, vitally dependent on the active movement of goods. Statistics of trade, therefore, have a special significance to the investor.

1. *Federal Reserve Index of Wholesale Trade.*—The Federal Reserve *Bulletin* carries monthly an index of wholesale trade based on the dollar values of the sales of 1,076

Fig. 36.—Federal Reserve Board Index of Wholesale Distribution. Nine Lines of Trade (Monthly Average, 1923 to 1925, 100 per Cent).

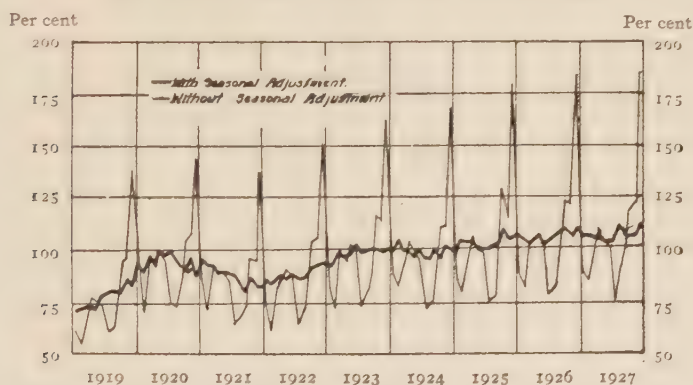


reporting wholesale dealers, some of whom are located in each Federal Reserve District. These dealers represent nine

different lines of trade. The base for each series is the average of monthly sales for the three year period, 1923-1925. Weights for each line are based on the average value of the production of each class of goods for the years 1923 and 1925. The composite index is obtained by combining all the individual lines for the country as a whole.²⁰

2. *Federal Reserve Board Index of Retail Trade.*—In addition to the preceding index of wholesale trade, the Federal Reserve Board also computes an index of department store sales, the sales of mail order houses, and separate indexes of the sales of seven different types of chain stores.²¹ The index of department store sales is based on data from 565 stores, including some from each Federal Reserve Dis-

Fig. 37.—Federal Reserve Board Index of Department Store Sales (Monthly Average 1923 to 1925, 100 per Cent).



trict.²² The mail order index is based on the sales of four large mail order houses. The various chains making up the chain store index are as follows: 5 five-and-ten-cent chains, 27 grocery chains, 9 drug chains, 3 cigar chains, 6 shoe chains, 4 music chains, and 5 candy chains. All indexes of sales prepared by the Federal Reserve Board are based on dollar volume.

²⁰ See Federal Reserve *Bulletin*, December, 1927, pp. 817-829. A similar index based on six lines of trade was published monthly prior to December, 1927.

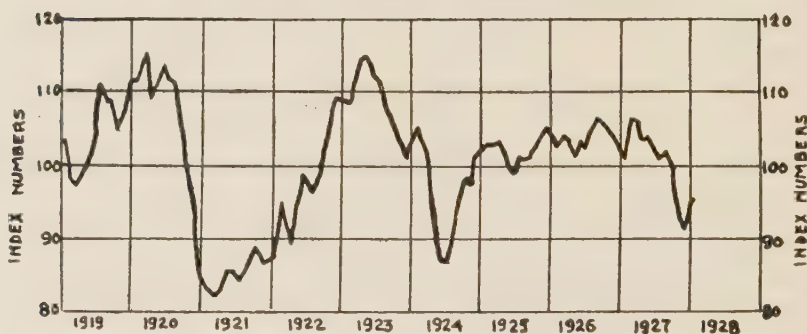
²¹ For original indexes see Federal Reserve *Bulletins* for January and March, 1924; for revision of grocery index, February, 1925; for revision of department store index, February, 1928.

²² A separate index is also published for each district.

Composite indexes of trade and business activity.²³—There are several composite indexes of business activity which, although frequently designated as trade indexes, really measure business activity in a more comprehensive fashion. We shall consider several of these briefly at this point.

1. *The Annalist Index of Business Activity.*—This index is published regularly each month in the *Annalist* and is based on production in 9 distinct lines and freight car loadings, with weights accorded the individual series in making up the composite index. The individual series with the weights are as follows: pig iron production, 4; steel ingot production, 7; freight car loadings, 35; electric power production, 22; cotton consumption, 14; wool consumption, 4; automobile production,

Fig. 38.—Annalist Index of Business Activity.



The Annalist, Feb. 17, 1928, p. 323.

4; bituminous coal production, 3; boot and shoe production, 5; zinc production, 2. Each series is corrected for seasonal variation and secular trend. The index as finally presented is in terms of a percentage deviation from normal or the secular trend line.²⁴

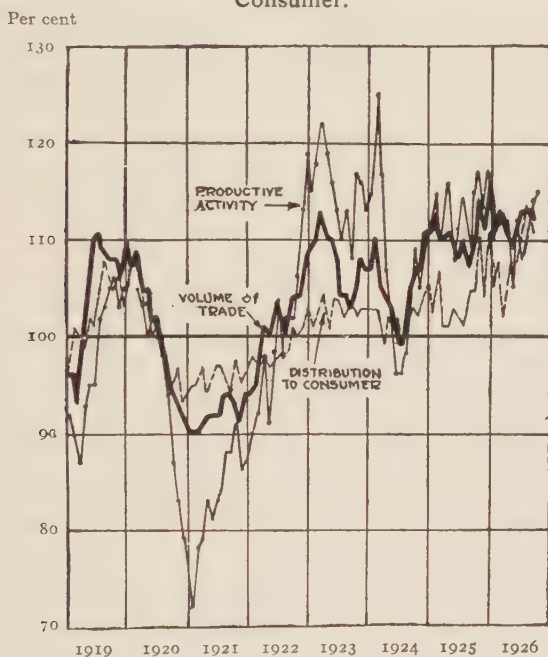
2. *Federal Reserve Bank of New York Index.*—A somewhat more comprehensive attempt to measure fluctuations in the volume of the country's business has been attempted by the

²³ We will not discuss at this point the "Harvard Index of Business Conditions," which consists of three series: (A) speculation, (B) business, and (C) money. This index is used in the Harvard Economic Service as a basis for interpreting the course of business through various phases of the business cycle and for purposes of forecasting, and is referred to in detail on p. 868.

²⁴ See *Annalist*, January 28, 1927, pp. 163-165, for details of construction.

Federal Reserve Bank of New York.²⁵ This index is made up of 28 different series, divided into the following 5 major groups: productive activity; primary distribution; distribution to consumers; general business activity; and financial activity. In nearly all cases where the constituent series are reported in terms of dollars they are "deflated." Proper seasonal cor-

Fig. 39.—Volume of Trade, Productive Activity, Distribution to Consumer.



rection is applied where necessary and the data so corrected are expressed in terms of the secular trend line as a base.

Foreign Trade.—Statistics of imports and exports have a very definite place among business barometers. Not only are such statistics valuable in making analyses of price cycles, but imports of crude and raw materials have been an excellent fore-

²⁵ For a more complete discussion of this index see Snyder, Carl, "A New Index of the Volume of Trade," *Journal of the American Statistical Association*, Vol. 18, 1923, pp. 949-963, and "The Revised Index of the Volume of Trade," Vol. 20, 1925, pp. 397-404. See also Snyder, Carl, "Business Cycles and Business Measurements," Chapter V, 1927, Macmillan Co., New York.

caster of changes in business activity, at least since 1919.²⁶ During the period 1919 to 1926, there was very close "time correspondence between the cbb and flow of industrial activity and that of the category of imports which is classified by the Department of Commerce as 'crude materials for use in manufacture.' "

Price indexes.—The relation of price changes to general business conditions and investments is so well known as to require but little comment at this time. Advancing or stabilized prices almost invariably accompany good times, while falling prices generally mean decreased profits for industrial corporations. Similarly, as we have seen, price changes have definite effects on various classes of security holders, falling commodity prices tending to enhance bond prices and to depress stock prices, whereas rising commodity prices have the opposite effect.

It often happens, in analyzing investments, that one's interest centers on price changes among certain groups of commodities. Nevertheless, the present discussion will be restricted to those indexes which aim to measure general changes in commodity prices only. It would require more space than can profitably be afforded here to give a complete account of all the more important price indexes. For such a discussion the student will do well to refer to some text on the use of business statistics.²⁷

1. *Bureau of Labor Statistics Index of Wholesale Prices.*²⁸—One of the most comprehensive indexes of wholesale prices in this country is that prepared by the Bureau of Labor Statistics. This index is now based on 550 commodities, although a smaller number were used in the older series. By means of statistical devices this series has been extended back as far as 1890. It is now expressed in terms of 1926 as the base year. Various groups are weighted according to census figures.

²⁶ See Richter, F. E., "Imports Forecast Our Business Activity," *Annalist*, July 30, 1926, p. 139.

²⁷ See, particularly, Hardy, C. O., and Cox, G. V., "Forecasting Business Conditions," Chapter XXII, 1927, Macmillan Co., New York, for excellent short treatment.

²⁸ See *Bulletins* of Bureau of Labor Statistics, Wholesale Price Series. See also monthly pamphlets, Bureau of Labor Statistics, "Wholesale Price of Commodities."

2. *Bradstreet's Index of Wholesale Prices.*—This was the first price index to be maintained in the United States. It is an aggregate of the wholesale prices per pound of 96 different commodities. This series is available in its present form as far back as January, 1899, and quarterly data extend back to 1892. There is no attempt at scientific weighing in this series.²⁹

Another index of wholesale prices is prepared by R. G. Dun & Co.³⁰ The Harvard Economic Service publishes a monthly index called "A Price Index of Business Cycles," and also a so-called "Sensitive Price Index." Another well known weekly index of wholesale prices is constructed by Irving Fisher.³¹

Among the more widely known retail price indexes must be included the Bureau of Labor Index of Retail Prices, based on the retail prices of food, gas, coal, and electricity. The Bureau of Labor Statistics and the National Industrial Conference Board both publish indexes of the cost of living, which are based largely on retail prices.

Building construction.—For many years statistics of building construction have been regarded as important measures of industrial activity. The volume of annual construction at the present time, based on data received from 36 different states, runs at the rate of over \$6,000,000,000.³² The influence of the building industry is very widely felt through our entire economic structure. Not only does this industry employ a large number of workers, but it draws its supplies from many different industries. Concerns engaged in the production of steel, cement, lumber, paints, hardware, elevators, plumbing supplies, and other accessories are vitally affected by changes in the status of building industry; and, of course, active building is reflected in larger freight movements. For this reason, changes in the volume of building are reflected in railroad earnings.

1. *Data on Building Contracts.*—One of the most comprehensive series of data related to the building industry com-

²⁹ Appears in *Bradstreet's Journal*, on the first Saturday of each month.

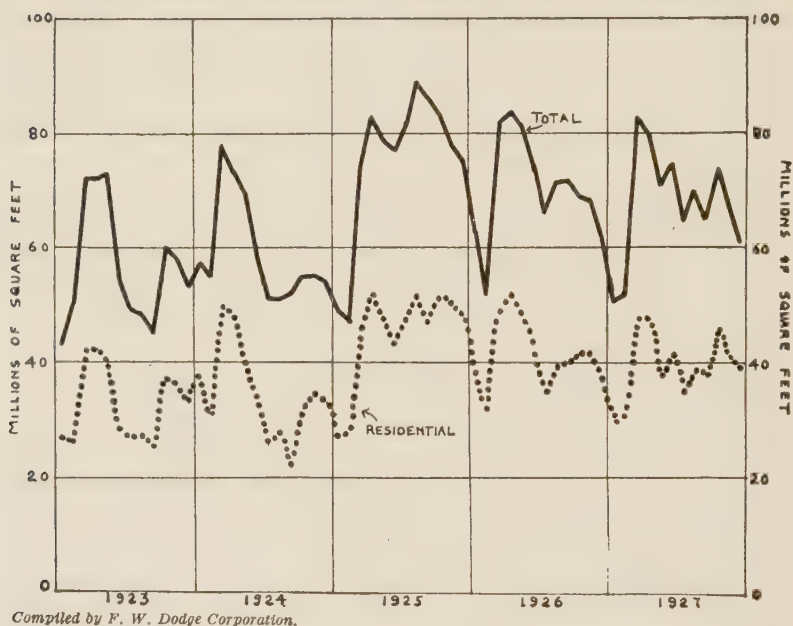
³⁰ Appears in *Dun's Review*, on the first or second Saturday of each month.

³¹ Appears in many current dailies each Monday.

³² Based on data of F. W. Dodge Company, which estimates the total construction in 1927 at \$6,303,055,000 (see *Commercial and Financial Chronicle*, Vol. 126, January 28, 1928, pp. 473-483).

prises statistics of building contracts awarded as collected by the F. W. Dodge Company.³³ These data are now reported both in terms of value and in square feet. The value and area series go back to 1923 and cover 36 states. Estimated value figures for 27 states are carried back to 1910.

Fig. 40.—Building Construction Contracts Awarded in 36 States.



Compiled by F. W. Dodge Corporation.

In addition to the series on new contracts awarded, data related to building permits are collected by Bradstreet's, Babson's Service, and the Federal Reserve Board. The Board's series, which are regularly published in the *Federal Reserve Bulletin*, are the most exhaustive, although they do not extend so far back as the other two. Building permits do not afford quite so accurate a picture of the situation as contracts let, since they represent only intentions to build, while contracts let represent actual performance.

³³ For a discussion of building statistics see Compton and Gries, "Available Building Statistics," in Persons, W. M., Foster, W. T., and Hettinger, A. J., Jr., "The Problem of Business Forecasting," 1924, Houghton Mifflin Co., Boston and New York. See also Hubbard, Jos. B., "An Analysis of Building Statistics for the United States," *Review of Economic Statistics*, 1924, Vol. 6, pp. 32-62.

Railway transportation.—Statistics showing the volume of business done by the railways in this country provide an excellent measure of general business conditions. Variation in freight movements depends on the expansion and contraction of practically every type of business, except purely financial enterprises. These statistics are not affected by irrelevant matter, such as income tax payments, quarterly and semiannual interest, and dividend payments, in the way that bank clearings and debits are. The three series in this group which are the most significant to-day are as follows: gross revenues of class I railroads; car loadings; and revenue tonnage.

1. *Gross revenues.*—The Interstate Commerce Commission publishes monthly the gross revenues of all class I railroads in the United States. These are reprinted in many of the current publications dealing with business and finance, and may be studied as a whole or by geographical sections, thus giving a measure of traffic movements in different parts of the country. In using such statistics for comparison, however, it must be borne in mind that they are affected by rate changes.

2. *Index of railway transportation.*—The most widely used index of railway transportation in this country is the series of weekly car loadings published by the American Railway Association. This series includes car loadings not only of carload lots, but also of less than carload lots. It is also possible to use data on car loadings to a certain degree as a measure of activity in selected industries, for the American Railway Statistics are broken into six commodity groups.³⁴

3. *Revenue tonnage.*—The Interstate Commerce Commission publishes quarterly reports showing the tonnage carried and that originating on class I roads (roads with annual gross incomes in excess of \$1,000,000). This series has historical value, but it is of little current use, since it is not published until about three months after the data are in. Monthly statistics of tonnage and ton mileage are collected, but not generally distributed.

Business failures.—"Dun's Review" and "Bradstreet's Journal" both publish monthly reports of the number of busi-

³⁴ These groups are: grain and grain products; live stock; coal; coke; forest products; ore; miscellaneous; merchandise, l. c. l. These data are reprinted weekly in the *Commercial and Financial Chronicle*, and are easily accessible.

ness failures. Bradstreet's publishes weekly figures for the United States and Canada, with a classification of the data by geographical sections and according to the size of the firms failing. Figures are summarized monthly and annually. Dun's data are published weekly and monthly and are classified according to types of business. The characteristic movement of series of business failures is interesting. During periods of liquidation there is a tendency for failures to increase rapidly. Thereafter, they decrease slowly and reach a minimum during periods of prosperity. Furthermore, there is a decided seasonal fluctuation in the number of failures. During December and January they reach a maximum and during August and September a minimum.

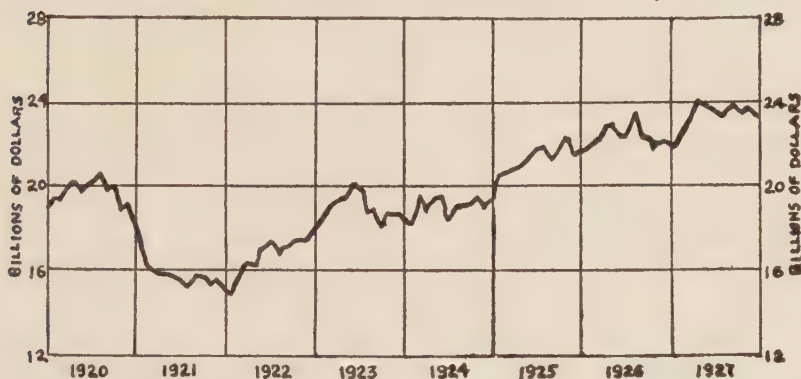
Banking and finance.—Data in this field may be used for two purposes: as a measure of the volume of trade; or as a measure of the abundance, or scarcity, or credit, and the state of bank reserves. The first type of data requires only a short descriptive treatment. The close relationship between the state of bank credit and the field of investment, however, requires a more detailed analytical treatment. Of the banking series that indicate the volume of trade the two most important are "debits to individual depositors' accounts," and bank clearings. More recently the use of data relating to the turnover of bank deposits has also been used as a business barometer.³⁵

1. *Debits to individual depositors' accounts.*—Practically 85 per cent of all payments in this country are made by means of check. The volume of check payments, therefore, provides an excellent index of the amount of business transacted in the country. The Federal Reserve Board at present compiles weekly debits to individual accounts from a large number of banks in this country. The number of reporting centers has increased from about 150, in 1919, when the series was started, to over 250, at present, thus giving the series an upward trend unrelated to business. However, continuous

³⁵ The "Turnover of Bank Deposits" is a new barometer recently devised by the Federal Reserve Bank of New York. For a complete discussion see Burgess, W. Randolph, "The Velocity of Bank Deposits," *Journal of the American Statistical Association*, 1923, Vol. 18, pp. 727-740; Snyder, Carl, "Turnover of Deposits as a Measure of Business Activity," *Journal of the American Bankers Association*, 1924, Vol. 16, pp. 471-473; and Snyder, Carl, "Business Cycles and Business Measurements," Chapter VII, 1927, Macmillan Co., New York.

data for 141 identical centers have also been compiled on the basis of monthly totals, thus giving a continuous series. The data for "debits" are customarily segregated into two series, so as to show payments outside of New York City, and payments in New York City. The reason for this lies in the fact that the latter series is overwhelmingly affected by financial transactions, which are not necessarily closely related to business.

Fig. 41.—Monthly Debits to Individual Accounts—140 Cities Outside New York (Adjusted for Seasonal Variation).



The Annalist, Jan. 13, 1928, p. 158.

2. *Bank clearings*.—Bank clearings constituted one of the earliest barometers of business to be generally used by economists. They are available in the *Commercial and Financial Chronicle* and its predecessor, *The Public*, as far back as 1875. Bank clearings reflect the effects of changes in business conditions, but they do not indicate accurately the amount of change. In the first place, they do not include *all* check transactions, but only those where the payee deposits checks in a different bank from the one on which the check is drawn. Furthermore, the series is subject to changes in the number of clearing banks from time to time. Both this and the former series are affected by changes in the price level; and also New York clearings are usually eliminated when attempting to measure purely business activity, because of the large amount of financial transactions consummated in this area.

Reserve condition of New York clearing house banks.—The combined reserve position of New York banks, which is published weekly by the New York Clearing House Associ-

ation, indicates the surplus or deficiency in the reserves of member banks. This information is given at the close of business each Saturday. In view of the many temporary features that are reflected in the condition of New York clearing house banks, the combined reserve position will fluctuate considerably from week to week. During periods of market activity and rising stock prices the ratio will be low. Also, any abnormal demands from out of town banks for funds will immediately be reflected in this ratio. Thus, at times when corporations make quarterly dividend distributions or semiannual interest payments, or when income taxes are payable, the ratio is likely to be affected. Large government disbursements will have a similar effect. Demand for funds by interior banks for purposes of crop movements will likewise reduce the ratio. At other times funds flow to New York banks and increase their reserves. The reserve position of these banks indicates the amount of funds that are immediately available for security operations. When there is an excess of reserves, call money is plentiful and call rates are low; when the reverse situation occurs, call money is scarce and rates move upward.

Relation of Federal Reserve System to credit conditions.

—Of more fundamental importance to the investor, however, is the condition of the Federal Reserve System, for here is reflected the general credit situation of the entire country. An adequate interpretation of the data which are currently published in reference to operations of the Federal Reserve System requires some understanding of the manner in which the system operates. This can be given here in outline form only. All national banks in the country and many state banks are members of this system. The Federal Reserve banks themselves are purely bankers' banks and do the bulk of their business with member banks, although, frequently, they buy a considerable amount of bills and acceptances in the open market.³⁶

Operations of member banks: reports.—Member banks, of course, loan directly to customers on notes, either secured by collateral, or unsecured. The latter are known as commer-

³⁶ Open market operations of Federal Reserve banks are becoming of increasing importance as an artificial means of controlling current interest rates. When it is desired to raise rates the Federal Reserve banks reduce their holdings of bills and securities. Conversely, when it is desired to lower rates the banks enter the market and purchase securities and bills.

PRINCIPAL RESOURCES AND LIABILITIES OF ALL REPORTING MEMBER BANKS IN EACH FEDERAL RESERVE DISTRICT

(As at the Close of Business, February 21, 1928, in thousands of dollars)

<i>Federal Reserve District</i>	<i>Total</i>	<i>Boston</i>	<i>New York</i>	<i>Phila- delphia</i>	<i>Cleve- land</i>	<i>Rich- mond</i>	<i>Atlanta</i>	<i>Chicago</i>	<i>St. Louis</i>	<i>Minne- apolis</i>	<i>Kansas City</i>	<i>Dallas</i>	<i>San Francisco</i>
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Loans and Investments—Total.....	21,575,271	1,512,583	8,159,471	1,214,322	2,144,373	690,417	614,507	3,127,382	730,727	379,661	656,276	442,768	1,004,784
Loans and Discounts—Total.....	15,048,432	1,040,756	5,746,807	785,710	1,427,357	513,634	491,843	2,224,825	511,303	246,366	434,803	340,731	1,284,297
Secured by U. S. Gov't obliga's.	126,560	4,785	50,020	7,902	15,616	3,025	5,425	21,760	4,224	2,361	3,350	3,509	4,583
Secured by stocks and bonds...	6,299,928	376,541	2,735,882	430,449	649,948	163,342	120,657	970,714	203,924	78,070	133,081	90,062	346,658
All other loans and discounts...	8,621,944	659,430	2,960,905	347,359	761,793	347,267	365,761	1,232,351	303,155	165,335	298,372	247,160	933,056
Investments—total.....	6,526,839	471,827	2,412,664	428,612	717,016	176,783	120,664	902,557	219,424	133,295	221,473	102,037	620,487
U. S. Government securities.....	2,972,036	172,335	1,179,863	120,983	319,416	72,926	56,069	376,829	84,166	69,364	104,802	72,835	342,448
Other bonds, stocks and securities	3,554,803	299,492	1,232,801	307,629	397,600	103,857	64,595	525,728	135,258	63,931	116,671	29,202	278,039
Reserve balances with F. R. Bank	1,743,731	101,170	797,039	83,016	129,746	43,625	42,282	263,217	48,308	28,701	56,401	35,186	115,040
Cash in vault.....	245,308	18,059	69,731	14,766	27,994	12,213	10,497	38,710	7,093	5,680	11,383	8,896	20,286
Net demand deposits.....	13,495,114	926,682	5,933,585	759,851	1,053,489	375,048	343,360	1,836,708	415,345	224,573	504,174	309,592	812,701
Time deposits.....	6,644,491	488,862	1,608,945	296,048	928,248	247,449	239,301	1,207,982	246,865	137,811	164,913	117,546	960,521
Government deposits.....	34,761	3,034	11,647	3,016	3,499	1,297	1,853	3,106	648	296	749	1,020	3,786
Due from banks.....	1,141,708	52,058	144,677	53,784	92,278	59,421	74,051	229,985	57,336	43,717	120,196	60,100	153,205
Due to banks.....	3,461,582	152,628	1,307,373	171,124	259,085	113,511	125,986	515,989	148,373	100,545	230,744	113,223	223,001
Borrowings from F. R. Bank—total	335,618	29,250	62,795	32,598	45,623	17,574	18,502	45,308	21,462	3,250	2,842	2,726	53,778
Secured by U. S. Gov't obliga'ns	224,842	10,813	49,099	28,155	26,023	4,134	2,816	38,230	12,688	3,250	1,300	2,040	46,297
All other.....	110,776	18,437	13,696	4,443	19,600	13,440	15,686	7,078	8,777	.....	1,542	686	7,481
Number of reporting banks.....	648	36	82	48	71	66	33	92	30	24	65	45	56

cial loans. In addition to loans and discounts, member banks may invest part of their funds either in government bonds or in other securities. Member banks, however, must have some cash on hand in order to transact their normal day-to-day business, and are required by law to maintain balances on deposit with Federal Reserve banks equal to a certain percentage of their deposits outstanding. Such deposits constitute the only legal reserve requirement of member banks. The amount so required as legal reserve varies from 7 per cent of demand deposits in the case of country banks to 13 per cent for reserve city banks. The items so far mentioned constitute the principal assets of member banks. On the liability side of the member banks' statement, the following important items appear: deposits; demand; time; government; amounts due other banks; and rediscounts with Federal Reserve banks. Under the present system, member banks may increase their reserves by rediscounting notes held by them at the Federal Reserve bank in the district in which they are situated. This method of increasing reserves is generally delayed until made necessary by expanding needs for credit, however, for there is a certain reluctance on the part of banks in this country to rediscount. The table on page 817 shows the principal resources and liabilities of reporting member banks for the week ended February 21, 1928.

Reports issued by Federal Reserve banks.—Before analyzing these figures, we shall consider briefly the statements issued by the Federal Reserve banks themselves. While a separate statement of resources and liabilities is issued weekly for each bank, the most significant report from our present standpoint is the combined statement for all banks. Under "Resources" the most important item is "Reserves." With very minor exceptions, the only legal reserve is gold. Bills discounted, bills purchased in the open market, and securities held constitute the next most important items, while other assets, such as checks in process of collection, amounts due from other banks, and premises cover remaining assets as listed under the heading "Resources." Under "Liabilities," the most important items are Federal Reserve notes in circulation and deposits. In order that the student may be familiar with the combined statement as customarily issued each week by the Federal Re-

serve Board, data for the week ended February 29, 1928, and for the corresponding week in 1927, are presented below:

COMBINED RESOURCES AND LIABILITIES OF THE FEDERAL RESERVE BANKS

(As at the Close of Business, Feb. 29, 1928)

	Feb. 29, 1928	Mar. 2, 1927
Resources		
Gold with Federal Reserve agents.....	\$1,388,957,000	\$1,534,183,000
Gold redemption fund with U. S. Treasury...	45,952,000	43,204,000
Gold held exclusively against F. R. notes..	1,434,909,000	1,577,387,000
Gold settlement fund with F. R. Board.....	752,529,000	633,998,000
Gold and gold certificates held by banks....	620,932,000	770,201,000
Total gold reserves.....	2,808,370,000	2,981,586,000
Reserves other than gold.....	165,931,000	162,328,000
Total reserves	2,974,301,000	3,143,914,000
Nonreserve cash	70,296,000	66,755,000
Bills discounted:		
Secured by U. S. Government obligations..	306,405,000	248,483,000
Other bills discounted.....	186,163,000	186,161,000
Total bills discounted.....	492,568,000	434,644,000
Bills bought in open market.....	343,759,000	289,023,000
U. S. Government securities:		
Bonds	55,610,000	58,888,000
Treasury notes	206,036,000	94,687,000
Certificates of indebtedness.....	145,956,000	157,399,000
Total U. S. Government securities.....	407,602,000	310,974,000
Other securities (<i>see note</i>).....	1,000,000	2,000,000
Total bills and securities (<i>see note</i>).....	1,244,929,000	1,036,641,000
Gold held abroad.....		
Due from foreign banks (<i>see note</i>).....	567,000	659,000
Uncollected items	614,520,000	693,213,000
Bank premises	59,064,000	58,381,000
All other resources.....	11,168,000	12,735,000
Total resources	\$4,974,845,000	\$5,012,298,000
Liabilities		
F. R. Notes in actual circulation.....	\$1,588,238,000	\$1,716,956,000

	<i>Feb. 29, 1928</i>	<i>Mar. 2, 1927</i>
Deposits:		
Member banks—reserve account.....	2,374,515,000	2,231,271,000
Government	27,917,000	35,265,000
Foreign banks (<i>see note</i>)	6,044,000	4,929,000
Other deposits	17,129,000	18,116,000
Total deposits	2,425,605,000	2,289,581,000
Deferred availability items	579,520,000	639,342,000
Capital paid in	136,592,000	126,788,000
Surplus	233,319,000	228,775,000
All other liabilities	11,571,000	10,856,000
Total liabilities	\$4,974,845,000	5,012,298,000
Ratio of gold reserves to deposits and F. R. note liabilities combined	70.0%	74.43%
Ratio of total reserves to deposits and F. R. note liabilities combined	74.1%	78.5%
Contingent liability on bills purchased for foreign correspondents	\$238,817,000	\$95,834,000

Federal Reserve credit and business conditions.—Our next interest lies in the interpretations that may be placed on changes in these accounts and the relation of such changes to business conditions. Starting first with the accounts of the member banks themselves, we find that an expansion in business activity is first registered by an increase in "all other loans and discounts." If this expansion is accompanied by an increase in speculation, it is probable that "loans and discounts" secured by collateral will also increase. Investments, on the other hand, often may decrease at such times, for an active demand for loans to be used for commercial or business purposes requires the release of funds previously used for the purchase and holding of securities or an increase in the amount of bank credit in circulation.

Loan deposit ratio.—The relation between loans and discounts and deposits furnishes one index of the extent to which the resources of the bank are being utilized. During expanding business, loans increase and deposits decline, in view of an increased demand for funds to be used for business purposes. The converse tendency is noted when business declines. It is generally recognized that, when the ratio of loans and discounts to deposits increases above 100 per cent, business conditions are in a period of expansion, and that the short time outlook is for higher rather than lower money rates. In fact,

there is a definite relationship between cyclical changes in the ratio of loans and discounts to deposits and short time interest rates, especially for New York clearing house banks.³⁷

If the demand for banking accommodation continues to grow and member banks find it necessary to increase their reserves at Federal Reserve banks the item "Borrowings from Federal Reserve banks" will increase. A corresponding increase may be noted in the asset item, "Bills discounted," appearing in the combined statement of the latter banks. The real test, therefore, of the extent to which Federal Reserve credit is being utilized at any time is found in the extent to which member banks are required to rediscount at Federal Reserve banks. Until rediscounting operations are extensively initiated, it is reasonable to suppose that no heavy strain is placed on the banking system.

Combined condition of Federal Reserve banks: Federal Reserve ratio.—Since it is possible for member banks at any time to replenish their credit by rediscounting at Federal Reserve banks, it is necessary to study the position of the Federal Reserve banks themselves in order to get an accurate idea of the actual state of credit resources. The first significant test is the relation between reserves and notes outstanding, and deposits. Federal Reserve banks are required by law to maintain at all times lawful reserves equal to at least 35 per cent of their demand deposits and 40 per cent of notes outstanding. The combined reserve, as the ratio of total reserves to deposits and notes outstanding is called, must, therefore, be maintained somewhere between these two limits: that is, between 35 and 40 per cent. During 1927 this ratio varied between 70 and 80 per cent, although, during the period of overexpansion following the War, the combined ratio went down nearly 40 per cent, which may be regarded as the theoretical minimum.

Excess reserves.—Somewhat analogous to this ratio is the amount of excess reserves held by Federal Reserve banks. This may be computed by taking from total reserves 40 per cent of notes outstanding and 35 per cent of deposits. The resulting figure indicates the lawful reserves held by Federal

³⁷ See Persons, Warren M., "Cyclical Fluctuations of the Ratio of Bank Loans to Deposits," 1867-1924, *Review of Economic Statistics*, Vol. 6, No. 4, pp. 260-283.

Reserve banks which are not working at any given time. Every dollar of excess reserves in the vaults of Federal Reserve banks has the power of enabling credit expansion through member banks of somewhere between \$10 and \$25, depending upon the form of the expansion. It is easily possible that an expansion of 11 times excess reserves could be made at any time, if member banks were to rediscount freely.³⁸

Behavior of various items in combined statement and changes in business conditions.—The behavior of various items in the combined statements of Federal Reserve banks occasioned by changes in business conditions are very much as would be expected. The periods of recovery and prosperity are marked by an expansion in note issue and bills discounted, while bills bought in the open market and securities held tend to decline. At least, notes and bills discounted expand, if sufficient demands for discounts are made by member banks at Federal Reserve banks. At the same time deposits of member banks increase. The combined reserve ratio, previously described, decreases in response to these movements. During periods of strain a maximum expansion is reached and further borrowing is usually discouraged by increases in the rates at which member banks may rediscount notes held by them. In 1920, the year in which the system was put to a very severe test, the rediscount rates were as high as 7 per cent. During the depression which followed the crisis of 1920, rediscount rates were rapidly lowered. In fact, the rediscount rate in 1924 dropped as low as $3\frac{1}{2}$ per cent. Since 1920, the Federal Reserve Board and the governing boards of individual banks have more or less arbitrarily adjusted rediscount rates to prevent a recurrence of the 1919 and 1920 episode. The reserves at present held by the system are so abundant that an era of dangerous expansion could easily be financed before placing any great strain on our banking structure. In fact, at times, it has been difficult for Federal Reserve banks fully to employ their reserves without causing speculation in stocks and commodities with an accompanying advance in commodity prices.³⁹ Such changes, therefore,

³⁸ See Persons, Warren S., "The Basis for Credit Expansion under the Federal Reserve System," *Review of Economic Statistics*, Preliminary, Vol. 2, pp. 21-27.

³⁹ Daily average of excess reserves, computed on the basis suggested on p. 821, amounted to about \$1,400,000,000, Jan. 1, 1928. Since 1922 they have averaged

as have occurred in rediscount rates have resulted from a deliberate policy rather than from the working of the normal laws of supply and demand. If, at some subsequent date, a better distribution in the world's supply of gold is effected, and the large amount of gold now held by Federal Reserve banks is either utilized through a normal growth in business or to meet adverse trade balances, the condition of the Federal Reserve System should prove a much more sensitive barometer of changes in credit conditions than during the past six years. For the present, however, the statistical position of the system is useful only when employed to measure relatively the extent to which business is expanding or contracting.⁴⁰ At no time in the immediate future is it likely that reserves will be reduced to the danger point.

During periods of financial strain and industrial crises the liquidation process that takes place results in reducing notes in circulation, deposits, and bills discounted for member banks. The reserve ratio advances, and, during the latter part of this movement, Federal Reserve banks seek employment for their resources through purchase of securities and particularly by purchasing bills in the open market.

Regularity of fluctuations in business conditions—business cycles.—The reader who examines with any care the various charts which were presented in the preceding part of this chapter will undoubtedly be impressed by the regularity with which so-called cyclical movements take place in nearly all series. It has long been recognized that economic conditions are far from static. For years economists have observed the rise and fall of commodity prices, the expansion and contraction of markets, the rise and fall of production, and the advance and decline of interest rates. The recent progress in statistical technique and the greater interest in the relation

between \$1,250,000,000 and \$1,500,000,000. The reason for this situation is to be found partly in the large amounts of gold received from European nations during the War and impounded in the Federal Reserve banks.

⁴⁰ Here attention must be paid to increases or decreases in the gold supply of this country. During periods of influx, gold finds its way, for the most part, into the reserves of the Federal Reserve banks. Conversely, a net outflow results in a loss of gold to the Federal Reserve banks. This, of course, affects the reserve ratios. One must also consider the extent to which gold is used in circulation by means of gold notes. It may be possible at any time to replace gold with Federal Reserve notes for circulating purposes, thus increasing gold reserves.

between economic changes and business conditions has led to the discovery that these changes are not chaotic, but that they recur in well defined and regular cycles. According to studies made by the Harvard Committee on Economic Research each cycle is characterized by the occurrence of five distinct phases. These phases and the order in which, ordinarily, they develop are as follows:

1. Depression.
2. Recovery.
3. Prosperity.
4. Financial Strain.
5. Industrial Crisis.

Phases of the business cycle—depression.—The first phase—depression—is marked by low security prices, both stock and bond, as well as by a small volume of speculation and declining interest rates, due in part to contraction of business and increasing bank reserves. The accompanying dullness in stock market speculation and the contraction of industry causes a shrinkage in the demand for credit and the resulting accumulation of large idle funds in the banks of the country. Quite naturally an excess in funds and low interest rates stimulate the purchase of high grade bonds, whose prices declined during the previous period of high interest rates. A forward movement in bond prices marks the end of this period.

Activity in the stock market and in general business conditions continues at a low ebb for some time after bond prices start to move. Sooner or later, however, excessive liquidation in stocks ceases and shrewd investors start to buy high grade investment stocks which have been forced to prices below their actual worth.

Recovery.—After the advance in stock and bond prices continues for several months, business confidence gains and the period of recovery sets in. Industrial output increases, particularly as a result of the previous liquidation which has depleted stocks of goods in the hands of dealers. Merchants begin to restock and this results in expanding production, prices, and profits. The impetus given to the stock market as a result of easy money in the previous cycle is augmented by the feeling of prosperity which develops during the period of recovery.

Prosperity.—The forward movement in both bond and stock prices continues to gain momentum. Sooner or later, however, interest rates advance. The primary cause for this is the increasing demands placed on the banks for funds to be used in expanding business activity and security purchases. The major advance in interest rates which starts at this point inaugurates a period of decline in the bond market, and at this juncture the period of prosperity may be considered as established.

The stock market, however, continues its advance. Public participation becomes widespread and borrowing at the banks for security purchases increases. Similarly, there are further demands for funds to be used in business operations. This eventually results in further advances in interest rates, closer scrutiny of loans, and a hesitancy in the stock market. The beginning of a major decline in stocks marks the end of this period.

Financial strain.—Although the beginning of a major decline in the security market generally starts at the end of the period of prosperity, business activity continues to expand and commodity prices to advance well into the period of financial strain. Speculation in commodities, heavy forward buying, the accumulation of large inventories at inflated values augment the strain on banking facilities. Interest rates advance further, production costs advance out of proportion to prices, and attempts to maintain a proper margin between costs and selling prices by advancing prices are met by consumer resistance.

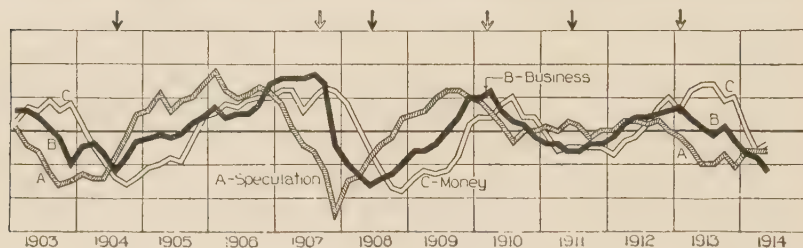
The banks, recognizing the generally unhealthy business structure at this point, shut down on new loans and call outstanding loans. Business men are forced to make price concessions to improve their cash position. Liquidation in commodities starts and markets become unsettled. The expectation of a shrinkage in trade encourages cancellations, and price cutting becomes the order of the day.

Crisis.—The final phase of the cycle is characterized by continued liquidation in security markets and commodities. The intensity of the latter, however, is governed largely by the extent to which the credit system was strained. Liquidation may be orderly, as during the industrial crises of 1903 and 1910, or drastic, as in 1907 and 1920. This period, which is marked

by active liquidation, is generally of short duration and merges with the period of depression, which we considered phase 1.⁴¹

Cyclical movements in business 1903 to 1914.—The following chart will show the characteristic behavior of speculative, business, and banking conditions from 1903 to 1914:⁴²

Fig. 42.—The Harvard Index of General Business Conditions, 1903–1914.



In the preceding chart curve A represents the course of speculation, curve B business conditions, and curve C the credit and banking conditions. It is interesting to note the consistency with which the speculation curve anticipated movements in the other two curves during this period. Similarly movements in business conditions, or curve B, anticipate movements in curve C.⁴³

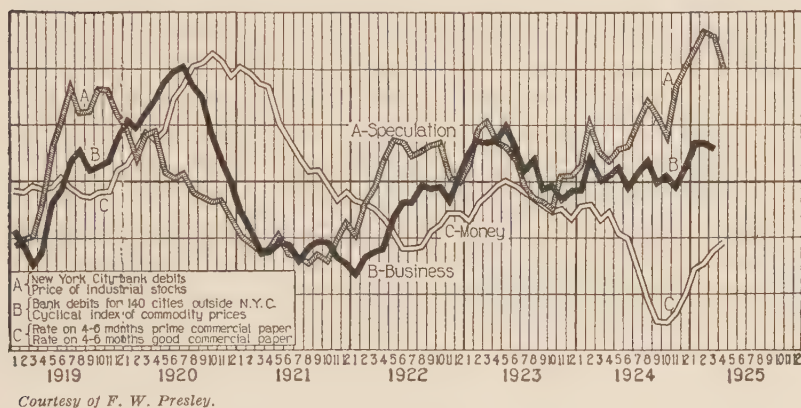
⁴¹ For a more complete discussion of the business cycle see Persons, Warren M., "A Non-Technical Explanation of the Index of Business Conditions," in *Review of Economic Statistics*, Preliminary Vol. II, February 2, 1921, p. 30 ff. See also Presley, Fred Y., "The Economic Cycle, Its Application to Buying, Selling, Production, Investments," published by Committee on Economic Research, Harvard University.

⁴² The method used in constructing the three curves in this chart and the series upon which they were based are explained in Professor Persons' article just referred to. The post-war series, presented on the following page, first appeared in *Monthly Supplement to the Review* for July, 1919, p. 6. This index was continued in the form there described until May, 1923, when it was replaced by a revised post-war index of general business conditions. See *Review* for July, 1923, pp. 187–195. There were minor revisions at the beginning of 1924 and in April, 1925. The next revision in the post-war index took place in March, 1926. See *Review* for April, 1926, pp. 64–68. An excellent article on "The Construction and Interpretation of the Harvard Index of Business Conditions," by Bullock, C. J., Persons, W. M., and Crum, W. L., appears in the *Review* for April, 1927. Subsequent revision of Curve A, "Speculation," is described in the *Review*, July, 1927, pp. 116–120.

⁴³ We will subsequently consider the use of these three curves for the purpose of forecasting business movements. See p. 868.

Post-war tendencies.—During the post-war period, 1919 to 1926, the same characteristic tendencies continued. In 1919 a rapid upward movement in the business or B curve occurred, which was anticipated by an upward movement in speculation. During the early stages of this upward movement money rates and credit conditions were favorable. The culmination of the period of prosperity is noted at the close of 1919, and, in 1920, the period of financial strain was indicated by rapidly advancing interest rates. The period of crisis occurred about the middle of 1920 and continued until about March, 1921. During this period stock prices fell rapidly, business activity declined sharply, and money rates, after reaching a peak during the latter part of 1920, likewise declined. The following period of depression lasted until the

Fig. 43.—The Harvard Index of General Business Conditions, 1919–1925 (Presley, F. Y., "The Economic Cycle; Its Application to Buying, Selling, Production, Investments," Cambridge, Mass., Harvard University Press, 1925).



first part of 1922. Following the advance in stock prices in 1921, business activity started to increase in 1922, and, shortly, phase 2—recovery—was well under way. This period of recovery quickly merged into a period of prosperity that culminated in the early part of 1923. Following this was a period of strain and crisis less severe than that of 1920 and 1921 and of shorter duration. In the latter half of 1923 a period of advancing stock prices began that carried stocks to very high levels in 1926. Business, on the other hand,

remained fairly uniform, although the main tendency was upward. Interest rates sank to very low levels in 1924 and have recovered only moderately since that time. It would appear that the abnormally large reserves of the Federal Reserve System had somewhat upset the previous significance of the credit situation as an index of business activity. At no time since the depression of 1920 and 1921 has the credit situation been strained. Such changes in interest rates as have occurred have been moderate and have resulted from the deliberate policy of the Federal Reserve Board in advancing rediscount rates when speculation in commodities appeared imminent rather than from abnormal credit demands in relation to banking resources. The chart on preceding page shows the behavior of the three series used in the Harvard Service for the period from 1920 to March, 1925, inclusive.

Summary.—In the present chapter we have laid the foundation for a more detailed analysis of the relation of security prices to various changes in the business cycle. Our work so far has been introductory to our main interest—security price movements. We know that security prices do move with changes in business activity and interest rates. The first problem, therefore, was to study methods for measuring changes in business and economic conditions, and the characteristic behavior of cyclical movements in these conditions. This we have aimed to accomplish in the present chapter. The following chapter will be devoted entirely to an analysis of security price movements, after which we shall discuss briefly several different systems of business forecasting.

CHAPTER XXXI

INVESTMENTS AND THE BUSINESS CYCLE—A STUDY OF MOVEMENTS IN SECURITY PRICES

Types of movements; daily fluctuations.—The first impression that one obtains as he approaches the practical field of investment is that price movements are uncoördinated and illogical. In so far as the welter of daily or hourly fluctuations is concerned, they are. An hour or a day spent in the trading or board room of any brokerage house, where the actual prices of listed securities are recorded immediately after each transaction, is interesting but not especially instructive. The prices of some securities will be seen to advance, while others decline, depending upon the immediate temper of the market. Reversals occur almost at the same point of time. Trading changes from one group of securities to another, and so on. Nor is the net result of a given day's trading of much greater significance. It is true that, by reading the financial page of any of the larger metropolitan dailies, one gets a somewhat more orderly account of the day's trading. Here will be given the high, the low, and the final prices of all listed securities and some of the more active unlisted ones, as well as the net changes in price as compared with the closing prices for the previous day. In addition to prices for individual securities, the more important papers publish daily averages which show the average movement in selected groups of securities. Most of these averages are so arranged as to show the daily movement of industrial stocks, railroad stocks, and high grade bonds.¹ An isolated study of these averages is also more or less confusing, in that advances and declines will be registered

¹ The *New York Times* publishes daily the average movement of 25 industrials, 25 rails, and 50 stocks combined, as well as one average for bond prices. The *Wall Street Journal* publishes the Dow-Jones averages, which are based on 20 industrials, 20 rails, and 10 bonds. The Standard Statistics Company publishes daily averages for industrials and railroad stocks.

in respect to daily price changes quite irrespective of the broader movements that may be in evidence at any given time.

Major and minor cyclical movements.—Despite the somewhat erratic changes that are constantly taking place in the prices of all securities, it has long been observed that broad cyclical movements in prices occur. For months the general price tendency of a given group of securities will be upward. True, the daily averages may not move upward consistently, yet, if one were to plot a curve of daily prices and run a line through it in such a way that the areas above and below the curve were equal, he would find a distinct and even upward slope. Sooner or later, however, a reversal in trend occurs and the general movement proceeds downward, although for some days or even weeks the averages may be up.

These broad swings are, in fact, almost invariably accompanied by minor movements of a reverse nature that stand out clearly in contrast to the confused daily movements. Thus, during a long bull market in stocks, there will be pronounced temporary reactions. Likewise, during a bear market, there will be temporary advances in prices of a rather pronounced nature. These minor movements generally result from the technical condition of the market at any given time and are more or less independent of those underlying economic forces that generate cyclical movements.

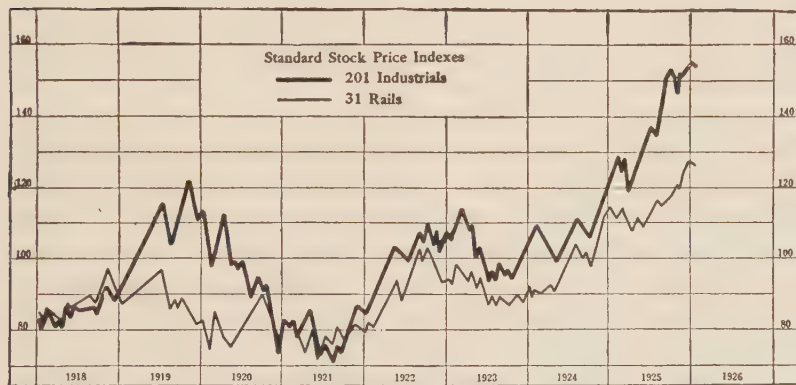
Secular trends.—A complete cycle in security prices may be said to comprise two movements, the one upward and the other downward, although at the end of the completed cycle it is by no means true that prices are brought back to exactly the same level from which they started. There is, in fact, still a fourth movement that is often present in the case of security prices as well as in other economic phenomena which is known as "secular trend." The existence of such a movement is often discernible in the case of bond prices, as well as in the prices of various groups of stocks. The direction of this trend is generally determined by fundamental economic changes that are basically related to gold in circulation, commodity price movements, and interest rates.

Security prices, absence of seasonal movements in.—Contrary to popular belief, there is no pronounced seasonal movement in the case of security prices. The reason is not hard to seek. If it were determined that stock prices always advanced,

or were likely to advance during any particular month, investors and speculators would certainly anticipate such a rise by buying before it was scheduled. This very action on the part of buyers would advance the market before the time for the seasonal advance was predicted to occur. Similarly, if stocks were destined to move downward at specified times of the year, a selling movement would anticipate the seasonal decline and hence upset all calculations. The movement of the prices of stocks and bonds is dependent on basic changes in economic and business conditions and not on the passage of the seasons.

Securities, division of.—It is not only possible but desirable, in discussing security price movements, to divide securities into certain groups on the basis of their reaction to fundamental changes in business conditions. This is necessary, for the reason that not all types of securities move in unison (witness the movement of railroad and industrial stocks during the period from 1918 to 1926). The following chart ² will illustrate the

Fig. 44.—Comparative Movements of Railroad and Industrial Stock Prices.



This chart shows the fluctuations in railroad and industrial stock prices (as measured by the Standard Statistics Co.'s Stock Price Index Numbers) from the beginning of January, 1918, through January 11, 1926.

point at issue. Thus, during the year 1919, and during the first part of 1920, railroad stock prices moved downward at a time when industrial stocks were advancing. From 1921 to 1925 movements in both series were very similar. During the

² From *Annual Statistical Bulletin*, through the courtesy of the Standard Statistics Company.

latter part of 1925, however, industrial shares advanced more rapidly than did rails. The price of a common stock, such as that of the United States Steel Corporation or of Sears Roebuck, will increase in value when commodity prices rise, for the obvious reason that, during a period of rising prices, the profits of such concerns are increased, or, at least, maintained, while the replacement value of plants, fixed assets, and inventories rise. Bonds of the United States Steel Company, on the other hand, may or may not increase in value during such a period. If it so happens that interest rates are advancing, as frequently happens when prices are on the up grade, due to the greater credit needs of business organizations, then the price of high grade bonds will tend to decline, in order that the effective yield thereon may be made to move in sympathy with interest rates.

Bonds are credit obligations and their yield is simply an expression of the current rate of interest received by the purchaser. If the open market rate of interest is 6 per cent, the market *prices* of the best grade of investment bonds could scarcely be so high as to cause the average yield on such bonds to remain at 4 per cent. Prospective purchasers would prefer to invest in short term paper at the higher yield, with the result that bond prices would be forced down until their yields were in closer relationship with current interest rates, although by no means necessarily equal to such rates.³ Furthermore, during periods of advancing commodity prices, the purchasing power of bonds, both principal and interest, decline. It would be logical during such times that interest rates should increase to a point sufficiently high to offset the loss in purchasing power caused by falling prices. We are indebted to Professor Fisher for the suggestion and statistical proof that when, for any reason, commodity prices begin to rise, interest rates advance, but not fast enough to offset the decline in the purchasing power of the principal and the interest caused by the rise of prices.⁴ In any event, it is apparent that no necessary

³ The relation of bond prices to interest rates will be more fully discussed on p. 844.

⁴ See Fisher, Irving, "The Purchasing Power of Money" (New York, Macmillan, 1911 and 1922), Chapters IV and XI. See also Moody's *Magazine*, February, 1909, pp. 110-114. Professor Fisher at that time suggested an explanation of the business cycle, based on the assumption that this lag enabled business

relationship exists between movements in the prices of these two types of securities. Our first step, therefore, will be to divide or to classify securities into groups, which, at least, tend to respond in like manner to the same changes in business and credit conditions.

Group One.⁵—Our first group will consist of securities which are benefited by rising commodity prices and increased business activity to such an extent that these factors are the major items governing the direction of their trend. It is true that interest rates have an effect on all security values to the extent that the "carrying charges" are increased when interest rates advance, and are reduced as interest rates fall. Yet, in connection with the group we are discussing, the effect of interest rates is subordinate to that of the direction and the rate of change taking place in commodity prices and the state of business activity. During periods of prosperity, securities in this class offer a return to holders in the form of larger earnings and dividends which more than compensates them for such higher carrying charges. In this group must be placed all common stocks of industrial corporations as well as bonds and preferred stocks that are not sufficiently secured to warrant dividend or interest payments during periods of low profits. In other words, some bonds are so well secured that a temporary recession in profits raises no doubt as to the prompt payment of interest or principal as due. In the case of other securities, the margin of earnings over interest or dividend requirements may be so small during good years that a recession in earnings seriously threatens the position of the bond or the stock. In such cases, value will undoubtedly respond to precisely the same factors as influence stock prices, whereas bonds of the first class will move in sympathy with money rates and credit conditions instead of directly in sympathy with profits.

men, who are large borrowers, to increase their profits and hence prompted them to increase their borrowings. In this way credit circulation is increased and prices further advanced, thus encouraging further borrowing, until, finally, an era of overexpansion results with doubts as to the solvency of some large concerns. A reversal in movement then starts. Here prices drop more rapidly than interest rates, causing small profits and discouraging business operations still further.

⁵ The classification here suggested follows the grouping made by Ray Vance in "Business and Investment Forecasting," Chapter VI, 1925, Harper & Bros., New York.

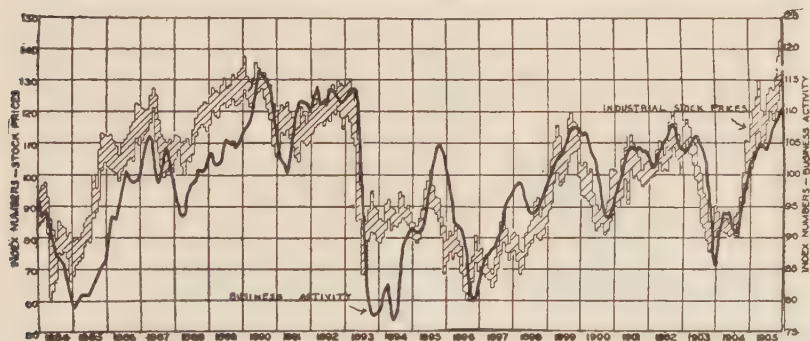
Group Two.—Our second group of securities will include those that are benefited by falling commodity prices and damaged by rising prices; but which, nevertheless, may profit more as a result of rising prices, on account of the greater volume of business that results, than they are damaged through the advance in operating costs so brought about. Or, conversely, while such securities may be benefited by falling prices, *per se*, the decline in business activity which often accompanies falling prices may more than offset the advantages accruing from the latter. The best examples of such securities are the common stocks of all railroad and public utility companies, and the preferred stocks and bonds of such utility and railroad companies as are unable to offer adequate security in the form of earnings and assets during periods of depressed earnings. Such companies are restricted in the matter of rates by government control, and the process of changing rates to meet advancing costs is slow and tedious. It may happen, as we have already seen in the case of our railroads, that a high state of business activity is inadequate to increase earnings of this group in the face of advancing costs. In practice, therefore, this group of securities may or may not move in sympathy with Group One, depending on the relative influence of prices.

Group Three.—In the third group we shall include high grade bonds and preferred stocks whose principal and income is limited, on the one hand, and definitely secured on the other. Such securities do not respond to increases in profits as do the securities of Groups One and Two, for their charges are amply secured. Large profits, therefore, mean no larger or surer return to the holder. So far as the relation of this class of securities to commodity prices is concerned, it is readily seen that their holders will be damaged by rising prices and benefited by falling prices, in as much as the return thereon is expressed in terms of dollars whose purchasing power increases during periods of falling prices and decreases when prices rise. It is also true that the prices of securities in this group tend to fluctuate in sympathy with money rates: rising, when money rates are declining; and falling, when interest rates are advancing.

Group One, cyclical movements of prices of securities in.
—We are now prepared to discuss somewhat more fully the

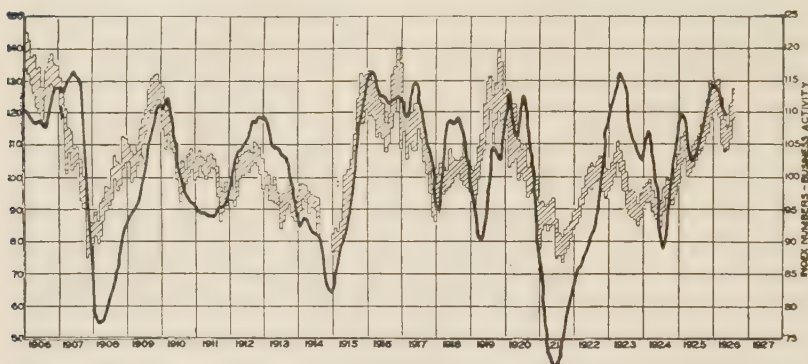
relationship between business and banking conditions and cyclical changes in prices of the various classes of securities that were set up in the previous analysis. While it is true that the situation in various industries may differ in respect to their responsiveness to general changes in fundamentals, with the result that some lines of industry are more, and others are less, prosperous than might be indicated by a study of general indices of activity, it is, nevertheless, true that industrial stocks as a class are highly responsive to changes in business activity. Common stocks, in particular, of industrial concerns, as well as inadequately secured preferred stocks and bonds, are benefited by rising prices and injured by falling prices, not only because of the effect of prices on profits, but also because of the fact that business activity is generally more favorable during periods of rising prices than during periods of falling prices. As we would expect, fluctuations in the prices of securities in this group are, therefore, more closely correlated with changes in business activity than are those of any other group. The following two charts show the relationship between price changes in industrial stocks and business activity for a period of over forty years: ⁶

Fig. 45a.—The Stock Market as a General Business Forecaster.



⁶ These charts are taken from the *Annalist*, August 13, 1926, pp. 204, 205. The shaded areas represent the monthly high and low prices of 10 industrial common stocks for the years 1883 to 1914 and thereafter 20 industrial stocks. The smooth curve is based on 4 series of statistics: freight traffic, bank clearings, imports of merchandise, and pig iron production. Each series, of course, has received the necessary statistical treatment to remove seasonal variation and long time trend in order to bring out cyclical movements only.

Fig. 45b.—Critical Examination of the Period from 1884 to 1926.



The correlation between cyclical movements in business and in industrial stock prices is seen to be very close. During the entire period covered there were fourteen complete cycles noted in stock prices. The turning points in these cycles either preceded or followed corresponding turns in business by a very short period.⁷ The various points at which permanent changes in direction took place in the two curves and the differences in time between the turning points on the two curves may be summarized as follows:⁸

MONTHS IN WHICH UPSWINGS IN STOCKS AND BUSINESS BEGAN			MONTHS IN WHICH DOWNSWINGS IN STOCKS AND BUSINESS BEGAN		
<i>A</i>	<i>B</i>	<i>No.</i>	<i>A</i>	<i>B</i>	<i>No.</i>
<i>Stocks</i>	<i>Business</i>	<i>Mos. A precedes B</i>	<i>Stocks</i>	<i>Business</i>	<i>Mos. A precedes B</i>
February, 1885	March, 1885	1	June, 1888	Nov., 1888	5
May, 1888	May, 1888	0	August, 1890	Sept., 1890	1
Dec., 1891	May, 1891	-7	February, 1893	May, 1893	3
1892-5 omitted	July, 1894	..	Sept., 1895	Nov., 1895	2
June, 1897	Nov., 1896	-7	Dec., 1899	March, 1900	3
October, 1900	Nov., 1900	1	March, 1903	July, 1903	4
July, 1904	Sept., 1904	2	January, 1907	July, 1907	6
March, 1908	May, 1908	2	January, 1910	April, 1910	3
March, 1915	January, 1915	-2	Nov., 1912	February, 1913	3
February, 1919	May, 1919	3	Dec., 1916	June, 1917	6
Sept., 1921	July, 1921	-2	Nov., 1919	August, 1920	9
June, 1924	August, 1924	2	April, 1923	June, 1923	2

⁷ Except in 1891 and 1896, at which times there were abnormal conditions prevailing. See articles referred to in following note.

⁸ Adapted from two articles appearing in the *Annalist*, August 13, 1926, and August 20, 1926. "Stock Prices and Business Activity," 1884-1926, by Emerson Wirt Axe and Ruth Houghton.

It is not the purpose to suggest here the extent to which turns in business activity may be used as a barometer to predict changes in industrial stock prices, or vice versa. We shall subsequently give attention to certain theories of investment forecasting. At this point our main interest centers on the close correlation between the price movements of all securities in Group One and business conditions.

Stocks, movement of, with trends.—Despite the similarity in movement just noted, the investor, nevertheless, is justified in assuming that some stocks will move against the trend. The year 1926 was one of exceptionally high prices for most industrial stocks, yet cotton textile stocks in that year were lower than at any time since the depression of 1920 and 1921, and many textile stocks were even lower in 1926 than in 1921. In other words, this entire industry failed to follow the general trend of business activity.

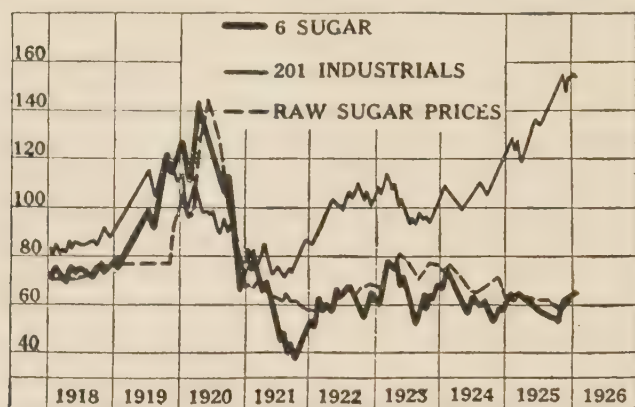
Fig. 46.—Movement in Prices of 5 Textile Stocks, 201 Industrials, and Cotton Goods Prices, 1918–1925.



Standard Statistics—Annual Bulletin.

The same may be said of sugar companies during the post-war period. Earnings in this group, as well as stock prices, rallied somewhat from 1921 to 1923, but since that time world overproduction of sugar has forced prices to the point where the Cuban companies in particular have done very poorly. Consequently, sugar stocks failed to participate at all in the great bull market of 1924 and 1925.

Fig. 47.—Movement in Prices of 6 Sugar Stocks and 201 Industrials.



Standard Statistics—Annual Bulletin.

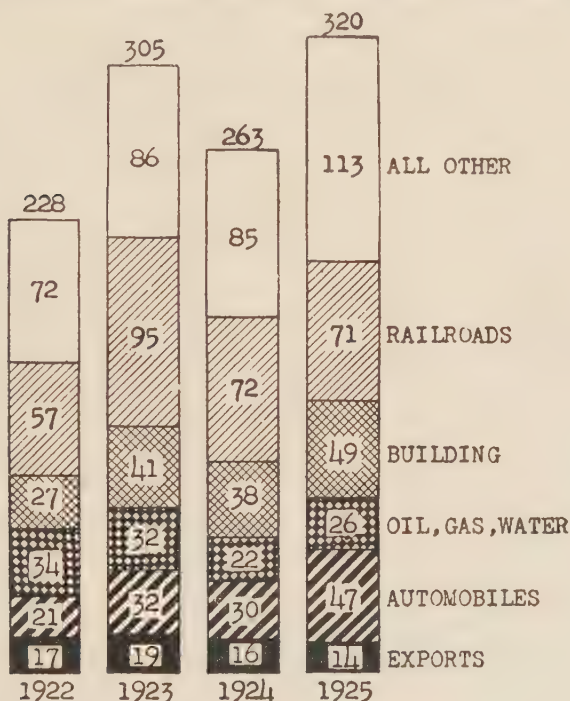
On the other hand, stocks, such as those of the larger steel companies, merchandising companies, retail and chain store, and, to a somewhat lesser extent, of automobile companies inevitably fluctuate at all times in close sympathy with general business conditions. The reasons for this, of course, go back to the relationship which the services of such concerns bear to our entire economic structure. Nearly all manufacturing industries use steel in one form or another in their processes. The same applies to the building industry and the railroad industry, both of which are large users of steel. The diagram on the following page ⁹ indicates the distribution of steel among different industries.

In view of the basic nature of the steel industry, therefore, it is inevitable that prosperity in a number of different industries should be reflected in large steel consumption, and, hence, in prosperity for steel companies. Merchandising companies likewise do well when the purchasing power of the community is high, which, in turn, results from activity in basic industries and rising commodity prices. In other words, the small investor who wishes to take advantage of the swings in stocks which accompany movements in fundamental business, and who, because of limited resources, cannot get a sufficiently wide distribution of stocks to permit the law of averages to

⁹ From the *Cleveland Trust Company Business Bulletin*, Vol. 7, No. 1.

work, should select a few basic or pivotal stocks and confine his commitments to these.

Fig. 48.—Uses of Finished Steel in Four Years (Unit, 1,000 Tons).



The large investor, on the other hand, can effect a wider distribution among his commitments and still get the advantages of average movements, at the same time concentrating to some extent in those industries which are in the strongest position in basic fields of production. A comparison of the fluctuations recorded in the table on following page will show the close relationship between fluctuations in U. S. Steel and market movements.

Nevertheless, the importance of general market movements is not to be overlooked. During the past quarter century there has been a great increase in the number of stocks actively dealt in on the exchanges, involving the introduction of securities of new groups of enterprises, such as motors, tire companies, chain stores, and moving picture houses. Trading has like-

wise been expanded so that transactions are now frequently recorded in as many as 600 issues, whereas, in 1900, fifty stocks comprised the active list. Despite this tendency, however, there is still nearly the same uniformity in price movements as formerly.

HIGH AND LOW POINTS OF 25 INDUSTRIALS AND U. S. STEEL

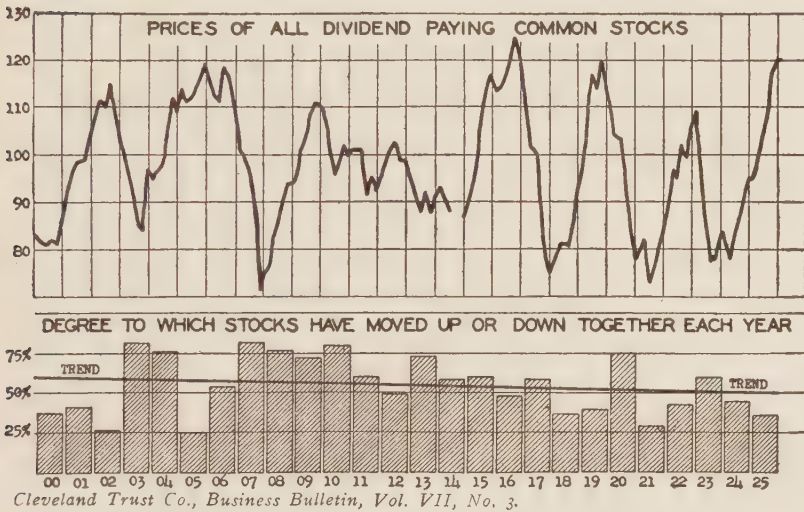
	<i>New York Times</i> *		<i>U. S. Steel</i>
1916 Low	86.60	July	79.75 March
1916 High	119.13	Nov.	129.75 Nov.
1917 Low	62.81	Dec.	79.50 Dec.
1917 High	99.74	Jan.	136.63 May
1918 Low	71.31	Jan.	86.50 March
1918 High	91.55	Oct.	116.50 August
1919 Low	80.37	Feb.	88.25 Feb.
1919 High	138.12	Nov.	115.50 July
1920 Low	76.55	Dec.	76.25 Dec.
1920 High	129.83	April	109.00 Jan.
1921 Low	66.24	August	70.25 June
1921 High	90.60	May	86.50 May
1922 Low	79.86	Jan.	82.00 Jan.
1922 High	116.24	Oct.	111.50 Oct.
1923 Low	99.05	Oct.	85.50 July
1923 High	118.44	March	109.63 March
1924 Low	103.26	April	94.25 June
1924 High	135.11	Dec.	121.00 Dec.

* From the *New York Times* average of 25 individuals.

The diagram accompanying the price curve (Fig. 49) was constructed as follows: the price movements of each year were tabulated so as to show in which month **each** stock reached its highest quotation, and, in which, its lowest. If there had been in any one year such a degree of uniformity of movement that all the issues had recorded their highest prices in one of the twelve months, and all had reached their lowest prices in another single month, the result would have been considered to constitute 100 per cent uniformity. Such uniformity failed to be shown, however, in any year, although as high as 82 per cent was shown in the year 1903 and over 83 per cent in 1907. It is interesting to observe that prices of stocks tend to move in unison to a much higher degree during periods of declining prices than during periods of rising prices. On the other hand, there was only a slight tendency during the latter part of the period studied toward less uniformity in movement than at the beginning of the period.

Price movements of Group Two in different phases of business cycle.—The important characteristic of securities in Group Two is the fact that the issuing companies are adversely affected by rising prices, *per se*, and benefited by falling prices, so long as business conditions are not too greatly changed at the time such movements take place. On the other hand, were prices to remain fairly constant, this group would be affected in the same way as securities in Group One by changes in business activity. It is always a question, therefore, whether the

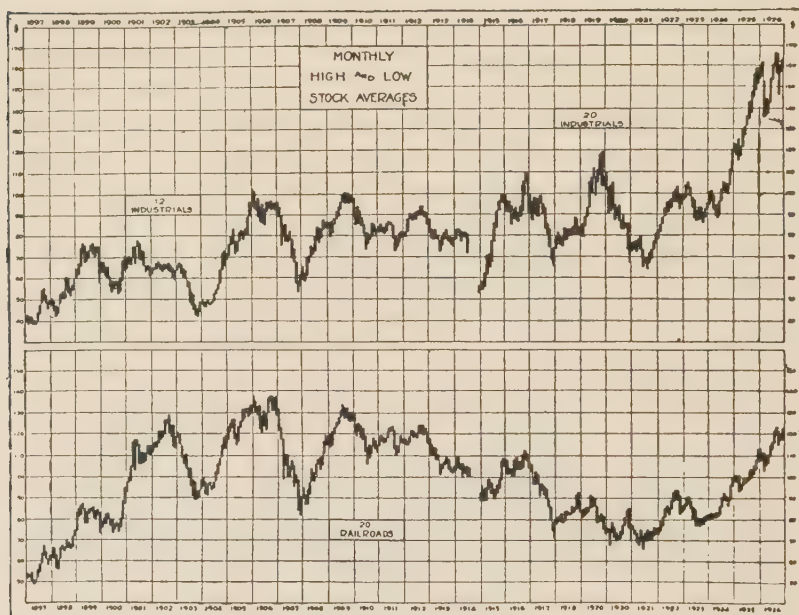
Fig. 49.



effect of price changes, which, normally, are upward, and, hence, unfavorable for the group during periods of business activity, are sufficiently pronounced to overcome the advantages accruing from the latter. The essential reason why concerns whose securities come in this group are unfavorably affected by rising prices is because they are unable to advance the charges for their services as rapidly as general prices advance. If, therefore, the phases of business recovery and prosperity are accompanied by only moderate price changes, this group of securities will act in very much the same way as securities in Group One. Likewise, during normal periods of strain, crises, and depression, the falling tendency in prices is not as a rule sufficiently pronounced to overcome the loss in business which occurs during such periods. For these reasons,

the prices of securities in both groups will tend to move together for considerable periods of time. The following chart will show movements in the Dow-Jones averages for industrial stocks—Group One—as compared with the average movements of 20 railroad stocks—Group Two—for the period from 1897 to 1926, inclusive.¹⁹

Fig. 50.—The Dow-Jones Averages Since 1897.



From 1897 to 1915 the direction of price changes in both groups were closely correlated, even though at times one group may have risen or fallen at a more rapid rate than the other. Thus, from 1897 to 1899, both curves moved upward—industrial stocks advancing from an average of around 40 to slightly over 75. Railroad stocks rose from about 50 to about 87. A slightly more drastic decline took place in industrials than in rails during the year 1900. From 1900 to the first part of 1903 no pronounced movement is noted in industrial stocks, while a very pronounced rise in railroads brought the average here up to 130 during the latter part of 1902. Speculation in railway shares, it will be recalled, ran high during the first

¹⁹ Taken from *Wall Street Journal*, Feb. 1, 1927.

few years of the present century in sympathy with the great consolidations that were going on at that time. The decline in 1903 was likewise more severe in the railroad than in the industrial group. From 1903 to 1906 the movements of the two curves were very similar. The average for industrials rose from about 42 to slightly over 100, and for rails from 90 to nearly 140. The year 1907 witnessed a severe decline in both groups; but this decline was followed by a rapid recovery, which lasted until the end of 1909. Thereafter, the movements of both curves were less pronounced, although minor fluctuations occurred nearly simultaneously in both. From 1915 on, however, the situation was quite different. Railroad stocks failed to participate extensively in the rapid rise in industrials which occurred during 1915 and 1916, although both groups declined during 1917. The great bull market of 1918 and 1919 was not participated in by the rails at all, the average of these stocks actually declining during the latter part of 1919. The reasons for this situation have already been discussed at considerable length in Chapter XVIII. Briefly, the explanation is to be found in the very rapid rise in commodity prices and wages which occurred from 1916 on. The railroads, despite some advances in rates, were greatly handicapped by the fact that rates were not advanced as rapidly as costs. Or, looked at another way, the expansion in business which accompanied rising prices at this time was inadequate to offset the injury done the railroads by advancing costs. The effect of government control from 1917 to March 1, 1920, must also be considered, although lowered earnings were largely responsible for the decline in railroad stocks at this time. Since 1920, however, the situation in respect to railroad securities has been greatly improved. Prices of commodities and labor were rapidly deflated during the depression of 1920 and 1921, and, since that time, have remained relatively constant. Production in basic industries from 1922 to 1926 increased substantially, except during the first part of 1922 and during several months of 1924. Car loadings have likewise shown a distinct upward trend during the period. The natural result of this situation has been a steady improvement in railroad earnings in this country and a corresponding advance in the prices of railroad securities. In fact, the average prices of railroad common stocks during the years 1921 to

1926 closely paralleled movements in industrials. The 1922 to 1926 period has, indeed, been subject to a set of circumstances most ideal from the standpoint of securities in Group Two. Business activity has been very well maintained, yet prices have remained constant or declined.

Railroad stocks were used for illustrative purposes in discussing securities in this group; but public utility stocks have been affected by these same tendencies, particularly during the post-war period. The values of such securities declined in 1920 and 1921, but since that time they have advanced rapidly.

Cyclical movements in bond prices: forces governing price movements of securities in Group Three.—Securities in Group Three move, not in direct sympathy with business activity and commodity prices, but rather in sympathy with changes in banking and credit conditions. In other words, price changes in this group are influenced only indirectly by the speculative activity which accompanies periods of recovery and prosperity, or by the characteristic tendency of industrial earnings to decline during periods of strain and depression. A study of the factors that influence bond prices at various phases of the business cycle will serve in a measure to explain price movements within this group. Let us start first with a period of depression. Interest rates are low, while the accompanying heavy liquidation of inventories and speculative securities results in creating liquid funds and reducing loans. On the other hand, confidence is usually lacking in the general situation to such an extent that stocks are not in demand. Early in the period of depression, therefore, idle funds which have accumulated are used to purchase high grade bonds, with the result that a major forward movement is initiated in bond prices. This movement progresses until business has expanded to a point where interest rates rise.

During the period of recovery, we saw that expanding business operations, rising commodity prices, and increased speculative activity eventually cause an increase in interest rates. Funds are sought for business purposes with a twofold result. Concerns which purchased bonds with surplus funds in the period of depression now liquidate in order to get cash for expansion; banks dispose of securities in order to increase their own loaning power. Furthermore, bonds themselves represent credit obligations and the rate of interest they return to the

investor is determined in part by their price. Granted that the coupon rate on a bond remains constant, the higher a given bond sells at a given time the lower will be its yield. Correspondingly, the lower a bond sells in price the higher its yield. The yield of a given bond at any point of time, therefore, varies inversely as its price.

Bond yields, as one would expect, fluctuate directly with interest rates, the extent of correlation being governed in part by the length of time the bond has to run to maturity. The yield on short term bonds, that is, bonds with less than two years to run, is very closely correlated with rates on commercial paper, which means, of course, that their prices fluctuate inversely with interest rates. Yields of long term bonds are less responsive to changes in interest rates, but, nevertheless, are influenced thereby to a very considerable extent. That is, during periods of high interest rates it is obviously to the advantage of investors to seek long term noncallable investments, in order to prolong the period over which a favorable return is to be enjoyed. For this reason, long term investments are sought in preference to short, thus keeping their yields down somewhat. At the same time, corporations, anticipating a reduction in rates to more reasonable levels, hesitate to finance by means of long term high coupon bonds. Rather do they seek to obtain funds by short term, or callable, bonds, in the hope of refunding when interest rates become more favorable to them. In this way, the supply of long term bonds is limited.

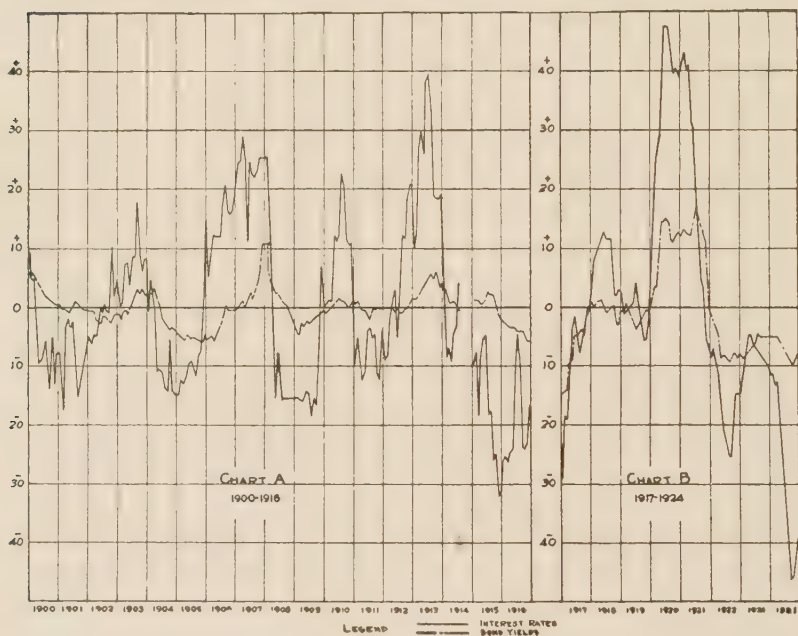
Conversely, during periods of especially low rates, investors seek short term commitments, in the hope of benefiting their position when rates are higher, and corporations seek to project the effect of favorable rates by borrowing through the issue of long term bonds. The *yield* on long term bonds, therefore, fluctuates less violently than the yield on short term bonds, where the correlation with 3 to 4 months' paper is high.

The following two charts will serve to illustrate the preceding facts. The first chart shows the cyclical changes that occurred in interest rates and municipal bonds, long term, from 1900 to 1924. The second chart compares cyclical changes in short term railroad bonds to similar movements in interest rates from 1910 to 1924.¹¹

¹¹ These charts were taken from "An Analysis of the Investment Status of Municipal Bonds," Harold H. Young, 1925. (A thesis prepared in partial

Here it will be seen that, while interest rates fluctuated over a much wider range than the yield on long term, high grade bonds, the latter, nevertheless, moved in fairly close sympathy with the former. In the case of short term bonds the correlation is exceptionally close.

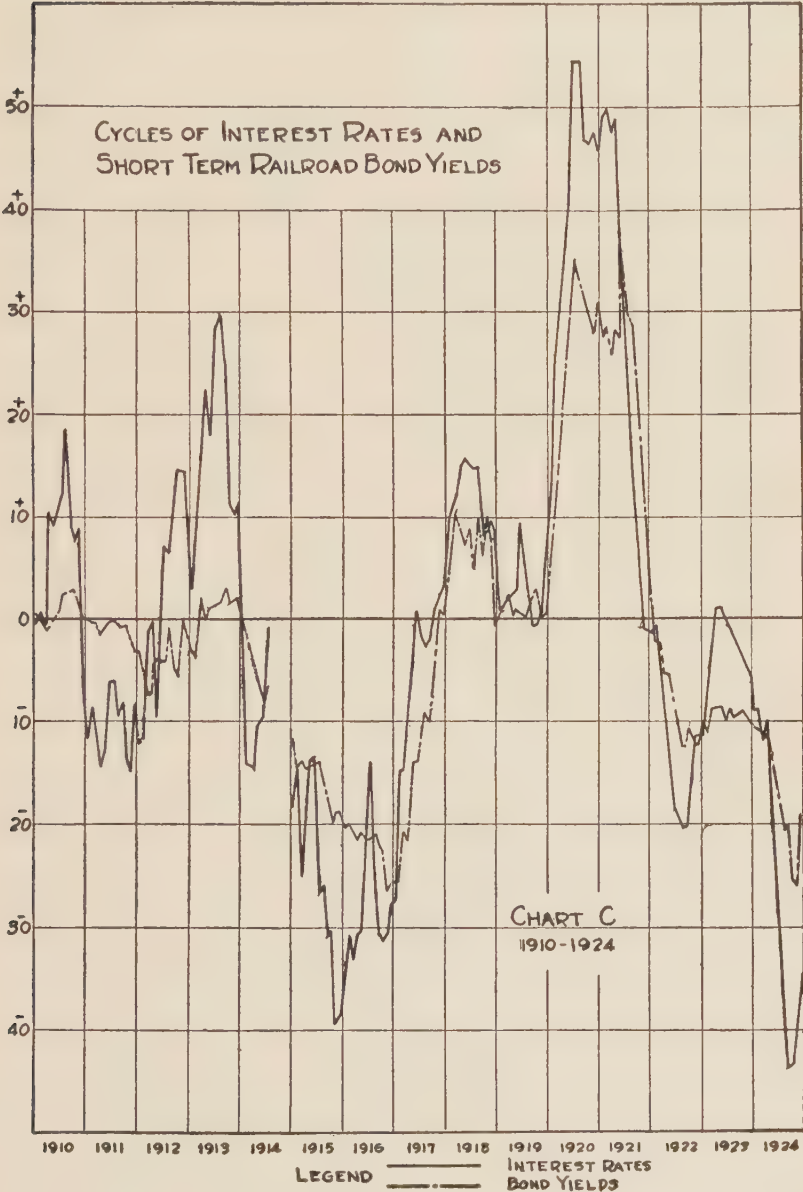
Fig. 51.—Cycles of Interest Rates and Municipal Bond Yield.



Despite the fact that the yields of short term bonds move in very close sympathy with interest rates, and, hence, fluctuate

requirement for the degree of Master of Business Administration, Brown University.) The curve representing cyclical fluctuations of municipal bonds was based on Standard Statistics average yield of 15 municipalities. The short time railroad curve was based on an index of short term railroad bonds prepared by Harvard Committee on Economic Research for 1922 and 6 months of 1923 (*Review of Economic Statistics*, 1923, p. 216), with the extensions forward and backward in order to cover the entire period. The rates on 4 to 6 months paper were used in the construction of the interest curve. In all cases, seasonal variation and trend were eliminated. The Pearson coefficient of correlation for the first series was .68 for an eight months' lag for the period 1900 to 1916. For the period 1917 to 1924 .92 for a 2 or 4 months lag. A similar coefficient for the second series was .94 with no lag, indicating a very high degree of correlation.

Fig. 52.



over a wider range than do the yields of long term bonds, their prices, nevertheless, fluctuate over a very small range. This is on account of the presence of a near-by maturity date, at which time they are payable at par. A 5 per cent bond with a year only to run will sell at 99.04 to yield 6 per cent, or at 100.97 to yield 4 per cent. A total change in yield of 2 per cent, which represents a wide fluctuation, is effected by a net change in price of less than two points. For this reason, notes or bonds with early maturity dates offer the most logical medium for temporary investments.

Following through the subsequent phases of the business cycle, at some point during the period of recovery it is logical to expect the beginning of a downward movement in bond prices, for at this point a major upward movement in interest rates is initiated.¹² During the succeeding period of prosperity this downward tendency in bond prices is accentuated by the growing demand for funds for business uses and speculation. The effect of advancing commodity prices on bond yields should also be considered. Theoretically interest rates should advance during periods of advancing commodity prices to a point sufficient to reimburse the lender, not only for the use of his funds, but also for the loss in purchasing power he suffers from his position as a creditor. It is doubtful, however, that this factor in practice ever exerts the full effect that, theoretically, one would expect.

During the period of financial strain and crisis, bond prices continue to decline with advancing interest rates and with the further demands placed on banks for commercial loans, until sufficient liquidation has taken place to bring us back again to the same point in the cycle from which we started.

Analysis of secular movements in security prices: stocks.—The distinction between cyclical and trend movements in statistical series has already been emphasized (see p. 796, *infra*). Accompanying the somewhat regular cyclical movements already discussed, there are long term movements in the

¹² Attention should be called to the fact that a decline in bond prices at this point is not entirely governed by interest rates but by money conditions as well. The requirement of funds for business and speculative purposes at this time causes the demand for bonds to fall off. The extent to which available funds are required for other purposes, therefore, will determine the rapidity with which bond prices respond to changes in interest rates.

prices of different types of securities, which are brought about by underlying changes in economic forces. In the case of stock prices, a study of such movements is handicapped somewhat by the lack of adequate data. The longest series of industrial stock prices are the Dow-Jones averages previously mentioned (see p. 842). This series, however, extends only as far back as 1897. A further objection to the available data is the form in which they are customarily presented. A mere average of stock prices from year to year, without any adjustment to account for the declaration of stock dividends or subscription rights, fails to indicate the appreciation or depreciation that occurs in respect to a given equity in the concerns whose stocks comprise the averages. Thus, let us assume that a given corporation whose stock to-day is selling at \$150 per share declares a 50 per cent stock dividend within six months. A year from to-day the stock of this corporation sells at \$125 a share. Has there been a decline in the price of the stock? It is true that one share will sell for less next year than at present, according to our assumption. Yet the present holder of 10 shares (currently worth \$1,500) will be in possession of 15 shares next year with a value of \$1,875. A somewhat similar situation may be created by the granting of subscription rights.¹³

Market value of stock equities, 1837 to 1923.—If one were to prepare an index of common stock prices that reflected stock dividends, split-ups, and subscription rights attaching to the stocks comprising a given series, it is quite possible that the only trend movement discernible in the series would be constantly upward.¹⁴ The nearest approach to a study of this kind covering any substantial period was made by Edgar Lawrence Smith.¹⁵ Mr. Smith here assumes that a hypothetical investor purchases approximately \$5,000 worth of stocks in 1837 (selected on a mechanical basis) and keeps this fund constantly invested in common stocks until 1924. At certain times during this period shifts are made in the investment holdings of the hypothetical investor, but such shifts are largely for mechanical reasons. Exclusive of the current income received, the market value of the investor's holdings in 1924 would have ap-

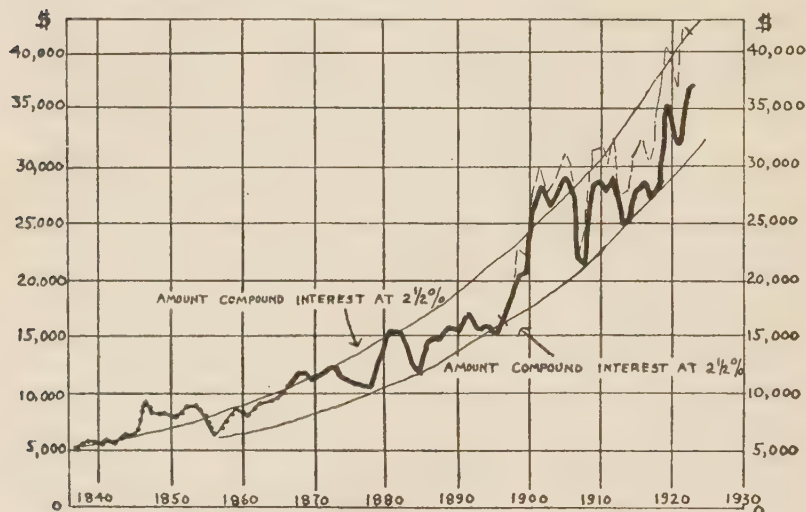
¹³ See p. 741.

¹⁴ See Fig. 11, for a study of industrial stock equities (1901-1926).

¹⁵ Smith, E. L., "Common Stocks as Long Term Investments," 1924, Macmillan Co., New York.

proximated \$37,000. The gradual accretion in values is shown in the following chart:¹⁶

Fig. 53.—Movement in Market Values of a Composite Holding of Common Stock, 1837 to 1923. Stock Dividends and Other Capital Distributions Retained.

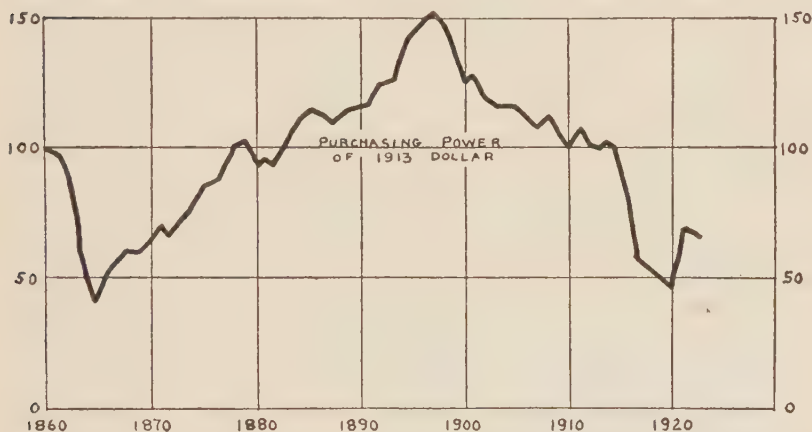


Value of common stock equities and commodity prices.—It is interesting to analyze this chart in connection with changes in the purchasing power of the dollar. If one were to reason deductively as to what trend movements were likely to occur in stock prices, he would unquestionably say that the trend movement in stock prices would probably be governed to a large extent by movements in commodity prices. At least, this statement would apply to that group of stocks known as industrials. Rising prices (falling purchasing power) benefit such securities. Conversely, falling prices (rising purchasing power), *per se*, act to the disadvantage of such stocks. The accompanying chart shows changes in the purchasing power of the dollar from 1860 to 1923. There is noted a steady fall in prices (rise in purchasing power) from about 1865 to 1897. From that point on until 1920 there occurred an almost uninterrupted rise in prices (fall in purchasing power). Yet, referring again to the chart showing the movement in the

¹⁶ *Ibid.* (See chart and explanation on pages 74, 75.)

market values of a composite holding of common stock, 1837 to 1923, we note that the trend from 1865 to 1897 was gradually upward in spite of falling prices. On the other hand, from 1897 to 1923 the trend was very sharply upward. The conclusion from this analysis seems to be that the trend movement in stocks (including diverse types) is constantly upward in a growing country such as the United States, but that the slope of the trend curve may be substantially changed by the movement in commodity prices. During periods of falling prices, the trend in common stock equities is slightly upward. During periods of rising prices, common stock equities increase more rapidly in market values.¹⁷

Fig. 54.—Purchasing Power of the Dollar, 1860 to 1923.



Trend movements in railroad stocks.—From 1887 to 1897 the trend of railroad shares was downward; from 1897 to 1907 strongly upward; from 1907 to 1921 distinctly downward; from 1921 to 1927 strongly upward. Although the year 1921 marks the beginning of another pronounced upward movement, the elapsed time from that point to the present is too short to permit deductions as to its permanency. The reasons for these broad trends are again found in basic changes

¹⁷ The trend in common stock prices from 1921 to 1927 has been very strongly upward, despite falling commodity prices. The control over prices and credit now exercised by the Federal Reserve Board has interjected a new element in the situation which must be considered.

which occurred in our economic structure. In the first place, railroad stocks are benefited by falling prices, and commodity prices fell consistently from 1865 to 1897. Furthermore, during the entire period from 1860 to 1906, our railroads may be said to have been in a period of increasing returns. Expansion in population and business activity constantly held forth the prospects of greater profits for the railroads. From 1900 on, the consolidation movement gave rise to a very receptive railroad market which did not culminate until the panic of 1907. Indeed, it is apparent that, while commodity prices before this time may have had some influence in determining the course of railroad stock prices, it was by no means the determining factor. Thus, in 1897, commodity prices reversed their long trend downward, yet, in that year, an upward cyclical movement of strong dimensions took place in the price of railroad shares. After 1906, however, and especially since 1910, there is strong support for the theory that railroad shares move inversely with commodity prices. The trend in railroad shares from 1910 to 1921 was distinctly downward, while commodity prices advanced. The effect of rigid government control was severely reflected in railroad profits until 1920. The recent history of railroad shares has already been discussed.

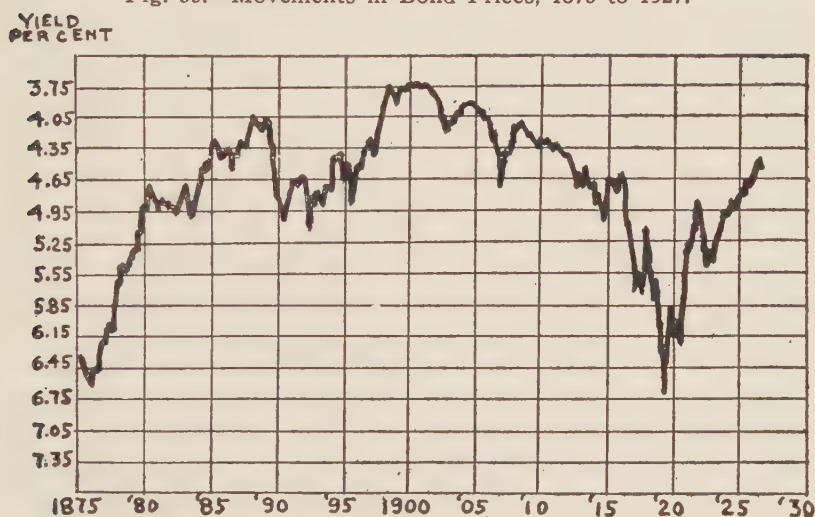
Trend movements in bond prices.—The long time, or secular, trend in bond prices is a phenomenon that has long been under observation by economists and statisticians. There are available a number of charts which show the yields of different types of bonds over a period of years and hence enable one to observe the more recent trend movements in bond prices. Such curves, which show the average yields of bonds, may easily be adapted for the purpose of studying price changes by inverting the curve. The logic of this operation is based on the fact that bond prices move inversely with yields. The following chart shows average bond yields over the period from 1875 to 1927, inverted.

A study of this chart shows clearly that there were during this time two distinct periods or movements in the secular trend of bond prices. From 1875 to 1902 bond prices advanced steadily, despite the presence of typical cyclical variations. From 1902 to 1920 there was a reversal in trend, the long term movement being distinctly downward during this

entire period. From 1920 on, there has been another change in movement, the trend from that year on advancing again.

Some causes leading to trend movements in bond prices: national debt and savings.—A partial explanation of these trend movements in bond prices is to be found in certain fundamental changes that occurred in our economic structure during the period under consideration. From the close of the Civil War until 1890, there was a gradual reduction in the government debt. In fact, during this period, over \$3,500,000,000 in principal and interest were paid. At that time wealth was

Fig. 55.—Movements in Bond Prices, 1875 to 1927.



much less widely distributed than at present, with the result that this sum probably found its way largely into the hands of wealthy investors who had the task of repurchasing other bonds. New security issues were not forthcoming on as large a scale at that time as since. Accompanying the repayment of government debt, there was taking place a constant increase in savings bank deposits. The investing of these deposits undoubtedly created a demand for high grade bonds. A third factor of importance was the heavy investment of British capital in American securities after the resumption of specie payments in 1879.

Secular trend in commodity prices and bond yields.—Another quite different influence must be recognized as having at

least a theoretical effect on bond prices, and possibly a practical influence. During the entire period from 1865 to 1897 the price level in this country showed an almost continuous decline. In 1865 the price index for the United States stood at 232, in 1897 at 67, the year 1913 being considered as 100 per cent.¹⁸

After 1897, on the other hand, a long period of rising prices set in, which did not culminate until the year 1920. In view of the effect of price changes on the purchasing power of bondholders, it is not illogical that bond prices should advance, and yields decline, during periods of falling commodity prices; or that the reverse should take place during periods of rising prices. When commodity prices decline, the bondholder gets a dual return, one in the form of interest, the other in the form of enhanced purchasing power in respect to both the income and the principal of his bonds. Conversely, when prices are advancing, interest rates do not indicate the actual return received, in that the loss in purchasing power from year to year of both principal and interest must first be deducted. Regardless of the extent to which bondholders consider changes in prices in buying and selling bonds in practice, it is interesting to note that the changes in the trend of bond prices from 1877 to 1925 occurred at almost the same time as changes in the trend of commodity prices, and that the trend movements in the two series have been in opposite directions.

Increase in capital requirements during twentieth century.—There were undoubtedly other broad economic factors which operated from 1902 to 1920 to cause a decline in bond prices in addition to the upward tendency in commodity prices. This rise in prices was accompanied by a relatively high state of industrial and business activity. Not only did physical production actually outstrip population during this period, but the capital requirements of new industries increased at a rapid pace. The amount of railroad bonds outstanding increased from about \$6,000,000,000 in 1902 to over \$11,000,000,000 in 1920. The capital invested in all manufacturing enterprises increased from \$8,975,256,000 in 1899 to \$44,466,594,000, in 1919.¹⁹ The enormous capital requirements occasioned by

¹⁸ See Fig. 54.

¹⁹ "U. S. Statistical Abstract," 1925, p. 745. Capital employed in factories,

the War have already been discussed.²⁰ It was an era of very rapid industrial and commercial expansion during which the demand for capital increased rapidly.

Stock and bond investments, comparison of, during large industrial profits.—During this period of rapid industrial expansion large profits were the rule. This situation undoubtedly resulted in part from rising prices, but in part also from the rapid exploitation of our abundant natural resources. In any event, there is no question that the period from 1900 to 1920 was an especially favorable one to the stockholder. It is not at all unlikely, therefore, that funds tended to be diverted from bond investments to stock investments, with a corresponding decline in bond averages, as indicated by all studies of bond yields during this period.

The culmination of this movement occurred in 1920. Since that time, commodity prices declined rapidly until they reached a level about one and one-half times their pre-war (1913) average, at which point they have remained fairly constant. The effects of war financing have gradually worn off and large capital resources have been built up through the development of the Federal Reserve System, a process aided materially by the inflow during the War of over \$1,500,000,000 of gold from European nations. In view of these factors it is entirely logical that the recent trend of bond prices should have been distinctly upward.

Minor cycles in stock prices.—Although lacking the economic significance that attaches to cyclical and trend movements in security prices, so-called minor movements are nevertheless important. We have purposely deferred analysis of price fluctuations of this nature until the present time, for they are always referred to the cycle in which they occur, and are not regarded as independent in nature. In fact, an analogy is frequently made to the behavior of the tides when discussing minor movements in security prices. Cyclical movements, which is the term already used to designate those fairly regular up and down swings in prices, may be compared to the ebb and flow of the tide. Yet, the incoming of the tide is never a constant process. Sharp advances are made at intervals by

excluding hand and neighborhood industries and establishments with products valued at less than \$500.

²⁰ See Chapter II, for discussion of capital requirements during this period.

the heavier waves, and there are lulls and recessions, even though the basic movement is forward. Similarly, an upward major movement in stock prices is never a smooth, uninterrupted advance, nor is a major downward movement without temporary halts and upswings. Such interruptions are called "minor cycles," or "reactions," in that they always represent a movement against the trend. Let us turn back to the chart on page 842, where the course of industrial stock prices is shown for a period of 30 years. Note the character of the curve during the major decline of 1920, during which there were registered no less than 7 minor upturns. Similarly, during the major advance in stock prices which began in 1924, and which has continued up to the present (1928), there is apparent at least three minor reactions, one in the spring of 1926 that covered a very wide amplitude (over 10 points in terms of the index given).

The length of period covered by a minor reaction is much shorter than that required by a major cycle. The former movement requires at least a few weeks, or perhaps a few months. The amplitude of such movements is also much narrower than that of the major cycle. In terms of prices, a minor cycle in stocks will usually cover a range of from 5 to 15 points.

Technical condition of market: reactions in a bull market analyzed.—An explanation of cycles of this nature centers largely around the technical position of the market. During the course of a major bull movement stock prices will advance rapidly. Speculative activity runs high, and many accounts become overextended. Likewise, the prices of some stocks are bid up beyond the point of real value. The market, in terms of the street, becomes "overbought." Some bit of unfavorable news or other rather insignificant event causes prices to shade off. Speculators with large paper profits sell, and other speculators who feel that the time is ripe for a reaction "sell short." At this point a severe reaction usually occurs in the market leaders, followed by declines throughout the entire list. As soon as this movement gets under way a number of stop loss orders are caught, which results in large blocks of additional stock being thrown on the market.²¹ At the same time, speculators who have extended their accounts on slender

²¹ For a more complete description of stop-loss orders see p. 749.

margins find these margins wiped out and are confronted with calls for additional margins. Lacking the necessary funds to protect their holdings, many are compelled to allow their brokers to sell. In this way, a minor reaction may continue for several weeks until the so-called weak accounts have been weeded out and the technical position of the market corrected, after which prices continue their advance.

There is little in the way of statistical data to indicate when the "top" of a minor upswing has been reached during a major bull market. The behavior of the tape is sometimes utilized for purposes of timing such reactions, although tape indications are far from reliable. After a period of rapid price advances a period of resistance is reached. Prices fail to advance farther, despite a large turnover in stocks. The market appears to be stale. Good news fails to stimulate further enthusiasm. True, individual stocks may be bid up actively in order to give the market an appearance of strength; but other stocks actually decline. A reliable barometer regarding movements of this nature may eventually be available from statistics on brokers' loans which have recently been made public.

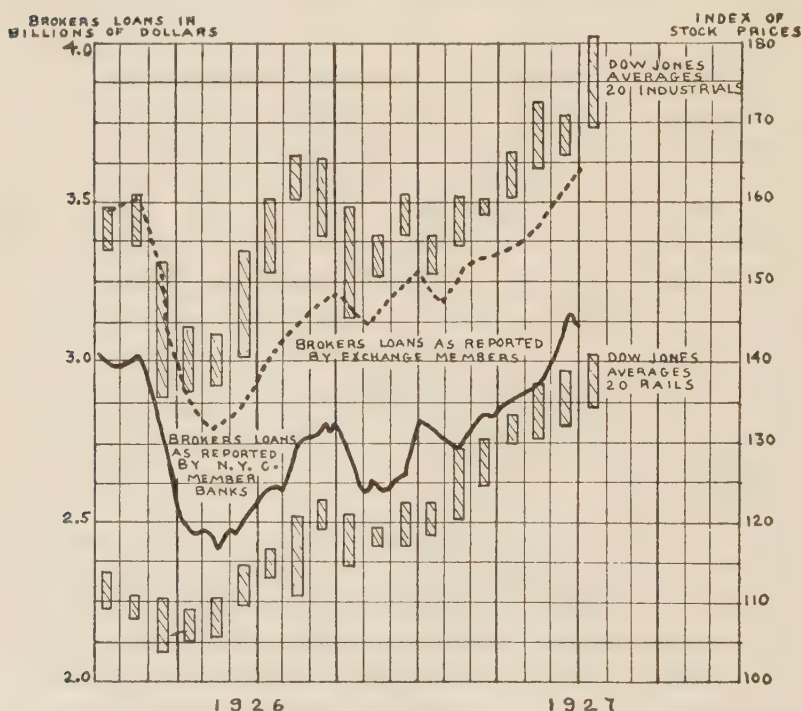
Significance of broker's loans.—For some time certain New York clearing house banks have reported weekly the amount of "street loans" made. Such loans are used largely for carrying stocks and bonds. In January, 1926, however, the Federal Reserve Board began to issue a weekly statement of broker's loans (including loans to investment bankers). At the same time, the Stock Exchange began to publish a monthly statement of the aggregate borrowings of its members for purposes of carrying securities.

The two latter series indicate partially the extent to which securities are purchased for speculation rather than for investment.²² When one purchases for speculative account on a margin, the broker through whom the purchase is made is required to borrow the additional funds in order to pay for the stock. When securities are purchased for investment, they are often paid for in full by the purchaser, who either has the funds himself or borrows part of the funds necessary through his bank, depositing the stock or bonds as collateral. During

²² Brokers' loans are used only partially to finance speculative purchases. Syndicates and investment bankers resort to such loans to carry investment securities pending distribution to the ultimate investor.

periods of active speculation, therefore, loans to brokers rise slowly at first, but with greater rapidity during the end of the minor cycle when distribution occurs and stocks pass from strong to weak hands. During the reaction that follows brokers' loans drop rapidly, especially as prices reach the point where accumulation for strong accounts starts. As stocks again advance brokers' loans start upward, the movement becoming more rapid as the top of the minor cycle is again reached. The following chart which shows the Dow-Jones average for 20 industrials and brokers' loans from January 20, 1926, to July, 1927, illustrates the typical behavior of the two series during the minor cycle, March to October, 1926.

Fig. 56.—Brokers' Loans and Stock Prices.



It is too early as yet to conclude that this behavior is typical. The data on brokers' loans has been running for too short a time to enable final conclusions. It is doubtful that data relative to loans of this character will ever acquire independent

significance. With ample credit facilities it is logical that substantial funds should flow into the call money market in New York and be used for financing security purchases. In the event that business requirements for funds increase so that the available supply of loanable funds is heavily drawn on, then a contraction in brokers' loans may be forced. As to whether brokers' loans are high or low, at a given point of time, therefore, depends partly on the likelihood of heavy requirements for funds from other sources and partly on the extent to which excessive stock speculation has been built up by means of easy money.

Upturns in a bear market, explanation of.—In much the same way that the market becomes "overbought" during a major bull market, so it is likely to become "oversold" during a major bear market. At such times prices are hammered down relentlessly. Stocks that are intrinsically good sell at bargains. Just as "long accounts" become overextended during a rising market, so do "short" accounts become overextended during a bear market. Speculators who have made paper profits through short sales become anxious to cash in. This, however, requires the purchase of stock. Others who have short lines out, so to speak, have stop loss orders at prices only slightly above the current market. Thus, when prices show signs of advancing at this stage, there is a scramble to buy stocks. As prices rise many of the "stop loss" buy orders—that are on brokers' books come up for execution. Finally, the whole process is affected by bargain hunters who are out to buy securities that are selling below their intrinsic worth. As a result of this combination of forces prices are bid up substantially until the technical position of the market is corrected and the immediate supply and demand readjusted. After this has occurred the downward course is resumed.

Pool operations and minor cycles.—The operation of pools, in all probability, is another factor that must be considered in explaining minor reactions. Although pool operations cannot be held entirely responsible for such movements, there is no doubt that such operations often exaggerate the course of minor cycles in the market. A market pool may be defined as a group of men with substantial capital at their command who form a community of interest for the purpose of market manipulation. Frequently these pools operate in connection

with certain financial interests which are close to the corporation whose stock it is planned to manipulate. In other cases, the pool operates with stocks of corporations with which it has no definite connection.

Generally speaking, the pool is in charge of a pool manager who conducts all operations. This is necessary in order to maintain a proper position in the market and to assure the proper execution of the pool's program. The pool operator or manager does all the buying and selling for the pool account.

The first task of the pool operator is to accumulate the floating supply of the stock which is to be manipulated. It is, of course, easier for a pool to operate with a stock that is selling somewhat below its real worth, and it is also easier if the pool starts operations at a period before the market has had a sustained advance and when money conditions are favorable. For this reason pools prefer to start their buying operations early in the course of a business cycle, often in the first phase of a minor cycle. The most satisfactory time for initiating pool operations is during the period of depression, or recovery. During such periods accumulation takes place for the pool account. Buying operations are carefully conducted in a way that does not excite interest in the issue and no bidding up is in evidence. The pool merely acquires stock as it comes on to the market. In fact, if anything, an attempt is first made to keep the price of the stock down either by frequent raids on the market, at which time the pool offers large blocks of stock for sale in order to depress prices, or else by circulating rumors of an adverse nature. In this way the pool gradually acquires all, or a large part, of the floating supply of the stock, that is, stock that is not owned by individuals in close touch with the concern itself, or which is not owned outright by investors who acquired the stock for its long pull possibilities and who are not interested in short time market fluctuations.

When accumulation is completed the process of marking up is started. Orders are then entered to purchase the stock at advancing prices. The supply at this time is small, with the result that prices advance with ease. As soon as the stock begins to attract attention through its market behavior favorable rumors are circulated. These add fuel to the fire and

further buying is induced. This process is allowed to go on until the pool operator thinks the time is ripe for distribution.

The problem of distribution is as difficult and requires as great skill as the process of accumulation, for the pool must dispose of all its holdings without depressing the market. This is accomplished partly by a further circulation of favorable rumors, but also by proper selling methods. The pool operator will sell stock only during periods of strength. As soon as signs of weakness appear, selling for pool account is stopped, and, if necessary, buying is again started. It is also frequent at this time to put through matched sales. That is, large blocks of stock are sold and bought simultaneously by the pool in order to give an air of strength. The process of distribution goes on until the pool has no more stock to sell.

It is by no means true that the stock stops advancing when the pool is through with it. It frequently happens, in fact, that the public, once it gets enthusiastic over a stock, will bid it up to levels quite beyond the hopes of the pool. The mere process of advancing tends to generate forces causing further advances in price. "The public," as the general run of small and misinformed traders is called, proceed to pyramid their holdings of the stock. That is, having made a paper profit, they use this to double up on their purchases. Each advance in price thus furnishes an additional margin with which such speculators may increase their holdings. It is in this way that prices are often carried beyond their true values during the first part of a minor movement within a major bull market.

The final stage in the process is when all professional support is withdrawn and the forces which sent the stock up have been spent. Sooner or later prices reach a point quite out of reason with the facts of the case, and short selling by professionals is started. For several days there may be spirited trading, but no headway is made toward higher prices. The inevitable crash finally comes, and, at this time, the presence of many stop loss orders and slender margin accounts assists to bring about a precipitous decline in prices.

It is evident that various pools and professionals operate more or less simultaneously in various issues. Such traders are actively in touch with the market, and, when the time is ripe for one pool to commence operations, it is profitable for others to start. In this way, the minor cycle is greatly en-

couraged in its course and probably amplified in its movement by the simultaneous operation of a number of different pools and by the transactions of professional traders who are in very close touch with the entire financial situation. The collapse of pool stocks, at the peak of a minor movement, has a sympathetic effect on the prices of all stocks, causing a reaction of wide proportions in the market.

During periods of major declines in stock prices pools are formed to conduct selling operations of a nature quite the reverse of buying pools. Here the aim of the pool operator is to dispose of large blocks of stock "short" and later to buy in. The effect of such operations is to aggravate the minor cycle during receding prices in much the same way that buying pools affect reactions during a bull market.

CHAPTER XXXII

INVESTMENTS AND THE BUSINESS CYCLE— INVESTMENT FORECASTING

Business barometers, classification of.—The apparent regularity with which cyclical movements occur in business activity and security prices, as well as the close correlation between such movements, has led statisticians and economists to attempt the construction of "barometers," if the term may be used, with which to predict or forecast future movements both in business activity and security prices.

In general, the current barometers, or better (systems of forecasting), fall in two rather distinct groups. The first is based on the theory that, in the field of economic activity, as in the physical world, every action is followed by an equal reaction. In other words, every period of prosperity is followed by a period of depression of equal magnitude. The other group bases forecasting on the assumption that there is a definite correlation between selected economic series, and that certain series may be used to predict movements in others. The chief exponent of the first theory is Roger W. Babson.

Babson system of forecasting analyzed.—The basis of the Babson system of forecasting is the "Babson Chart of American Business Conditions." The basis of this chart is a composite index of American business conditions referred to a trend line of growth. In this way, conditions are represented as favorable or unfavorable; above normal or below normal. The product of the time and intensity of favorable periods, according to the theory here used, must subsequently be balanced by periods of depression, the product of whose time and intensity equal that of the periods of expansion. The chart and basing used to demonstrate this theory follows:

Forecasting.—The Babson Service does not use any one specific formula for forecasting on the basis of the composite plot. In general, it is held that the size of any depression area can be predicted by the area of the preceding period of prosperity. According to this theory, if the composite plot crosses the basing x-y line before the depression area equals the corresponding prosperity area, the period of prosperity is destined to be short lived. At the completion of the depression area, however, there is no way of predicting the size of the prosperity area to follow.

However, the time sequence of certain of the curves may be used in part to give evidence of what is to come. Quoting from the regular barometer letter:

The high points of the stock market usually come in the early part of the overexpansion areas. The low points have come in the early part of the depression areas, although in 1914 the War held prices of both stocks and bonds down longer than usual. The Babson chart is an excellent guide for purchasing stocks, because we can know the approximate size of the depression area. Not knowing in advance the size to which the overexpansion area will develop, one must use judgment as to when to sell. Low money rates and high bond prices have usually come about the end of the depression areas and high money rates and low bond prices at about the end of the overexpansion areas.

A manufacturing index, recently prepared by the Babson organization, is now used in further application of the sequence theory of forecasting. This index, it is stated, "is the one which usually reflects the changes in the business area movements followed by an interval of perhaps two months by a corresponding change in the index of production and raw materials. Similarly, the index of distribution follows both production indexes."¹

On some occasions, the Babson Service makes forecasts based on the analogy of the current situation with that in past periods. In January, 1921, a complete Babson chart was published from 1890 up to that time, and predictions were made as to the course of the then existing period of depression on the basis of the years 1893 to 1897, the assumption being that conditions were similar during those years.² Similarly, during

¹ Barometer Letter, October 13, 1925.

² See Barometer Letter, Jan. 11, 1921.

the period from 1919 to 1922, it was held that the course of commodity prices would follow the trend which occurred after the Civil War.

On other occasions predictions are made on the basis of a fairly exhaustive treatment of several of the more important factors of the situation. On the basis that developments in the selected factors outweigh other factors, predictions are made as to the future.

Forecasting based on correlation: Brookmire system.—It will be noted that the statistical methods employed in the Babson chart do not directly involve the theory of correlation, although in some instances the sequence theory of forecasting is used. That is, there is no consistent effort made to use one or a group of statistical series for the purpose of predicting future changes in the movement of other series or in general economic conditions. In this respect, the Babson barometer differs from certain other well-known systems now employed for forecasting.

One of the earliest attempts to construct a barometer on the basis of the correlated sequence of different economic events was that devised by Mr. James H. Brookmire. The first attempts made by Mr. Brookmire were subject to certain criticisms; but, with the development of a more scientific statistical technique, the old Brookmire barometer has recently undergone several revisions.³

Following these earlier experiments the Brookmire Service developed a series of barometers for the purpose of predicting or forecasting both security and commodity price movements. The more important barometers used at one time or another in connection with this service are referred to under the following titles: Revised Barometer of Commodity Prices; Barometer of Industrial and Railroad and Public Utility Stock Prices; a Bond Barometer; and a Barometer of Lumber Prices.

In their final form, these barometers are single curves, comprising several individual indexes, or series, which are supposedly related to the series whose movements it is desired to

³ For criticisms of earlier Brookmire charts see Vance, Ray, "Business and Investment Forecasting," 1925, Harper & Bros., New York. The reader will find here an excellent nontechnical explanation of the present basis on which this service is maintained.

forecast. Thus the Revised Barometer of Commodity Prices includes the following factors:⁴

- a. The rate on commercial paper; both the actual position of the rate and the direction in movement being considered.
- b. Turnover of bank deposits.
- c. Physical volume of production in basic industries.
- d. Import—export ratio.

Similarly, the Barometers of Industrial Stock Prices and of Railroad and Public Utility Stock Prices were constructed by combining individual series that related in one way or another to movements in stock prices. The following series have been made use of in these two forecasting curves:⁵

- a. Stock Prices.
- b. Speculative activity.
- c. Commercial paper rate.
- d. Turnover of bank deposits.
- e. Volume of production in basic industries.
- f. Import—export ratio.

Brookmire barometer forecasting the movement of bond prices.⁶—The method by which major trends in bond prices are forecast by the Brookmire Service involves the use of a barometer based on changes in:

- a. The prices of stocks.
- b. The general level of commodity prices.
- c. The commercial paper rate.

Although these indexes are not put in the form of a composite plot, the various factors used are subject to the following interpretations in forecasting bond prices. Thus:

1. When stock prices remain on a flat or decline for three consecutive months, and when commodity prices decline one (1.00) per cent, the

⁴ For further details regarding construction of this index and its interpretation see *The Brookmire Forecaster*, "An Analysis and Forecast of Fundamental Conditions," September 28, 1925, Vol. 14, A-39.

⁵ The *Brookmire Analyst*, September 28, 1925, Vol. 14, C-20. The difference between the industrial stock price, and the railroad and public utility stock price barometers lies in the influence accorded the volume of production in basic industries.

⁶ The Brookmire "Investment Opportunity Bulletins," Series F.

major trend of bond prices will thereafter be upward. These two primary factors are sufficient to indicate an upward trend (this decline in commodity prices is cumulative; for example, decline, May 1, 1903, was 0.27 per cent; June 1, 0.55 per cent; July 1, 0.43 per cent; total decline, July 1, 1.25 per cent).

2. A major downward trend in bond prices is not readily indicated. Both stock prices and commodity prices may increase month after month, without indicating that the upward movement of bond prices is at an end. The bond market of 1922 is an example of such a situation. However, when stock prices increase for three consecutive months; and when commodity prices increase one and one-half (1.50) per cent; and when two secondary factors are in evidence; it indicates that the major trend of bond prices will thereafter be downward. (This increase in commodity prices is cumulative.)

The two secondary factors are: (a) An increase of one (1.00) per cent in Bradstreet's Index during a single month, following the gain of one and one-half (1.50) per cent in commodity prices. In this factor only, ninety-five one-hundredths (0.95) of one per cent is considered equivalent to one per cent. (b) Any increase in the commercial paper rate, following both the increase for three consecutive months in stock prices and the increase of one and one-half (1.50) per cent in commodity prices.

Whereas, the various barometers here outlined have been subject to error during the past several years, especially the barometers used in connection with stock prices, it should be said in all fairness that the Brookmire system recognizes the difficulty of devising infallible formulas by which movements in security prices or commodity prices can be predicted. In fact, the publication of various barometers as a part of the Brookmire Service has recently been discontinued.

Harvard Economic Service.—In 1917, Harvard University appointed a committee on economic research which, after considering various projects, decided its first enterprise should be in the field of economic statistics. The first tangible results along these lines came in 1919 with the inauguration of the Harvard Economic Service. This service consists of the Quarterly Review of Economic Statistics. The current review formerly came out monthly, but is now published weekly. That phase of the Harvard Economic Service of greatest present interest is the Harvard Index of General Business Conditions already discussed.⁷ This index, which comprises the three

⁷ For specimen see pp. 826, 827.

curves representing (A) speculation, (B) business conditions, and (C) money, may be used for purposes of predicting or forecasting security prices. If we again consider the various phases of the economic cycle it will be recalled that a major advance in stock prices is customarily initiated in phase one—depression—of the economic cycle. It is, therefore, preceded by declining business and declining money rates in the order named. It will also be observed, if one refers to the chart on page 826, that the A, B, and C curves are almost invariably in the same relative position at the beginning of an extended rise in curve A—speculation.

Stock prices, relation of, to changes in interest rates and volume of manufacture.—There are certain supplementary devices, so-called, which may be used in connection with the sequence theory of business cycles in order to determine with greater precision the points of time when cyclical changes should take place. For instance, the Harvard Committee found from a study of economic statistics covering a period of twenty-five years before the War, that a decline of $1\frac{1}{4}$ per cent in rates on prime commercial paper, duly corrected for seasonal variation, from the high point in the money cycle, was the signal for the inauguration of a forward movement in security prices. Furthermore, a decline in the "Harvard Index of the Volume of Manufacture" to a level below 85 per cent of normal, normal being statistically determined as from 70 to 85 per cent of plant capacity, is substantial evidence that the decline in security prices is about at an end.⁸

On the other hand, a major decline in stock prices begins in phase three—prosperity—of the economic cycle, and is preceded by advancing business and rising money rates in the order named. The position of the three curves—A, speculation, B, business, and C, money—is again approximately the same when security prices reach their upward peak. The supplementary tests, used in determining with greater accuracy the point at which a cyclical upturn in speculation will begin, are now reversed. That is, an increase of $1\frac{1}{4}$ per cent in interest rates on prime commercial paper, duly corrected for seasonal influences, from the low point of the money cycle, indicates the point of culmination of a major cyclical advance in security

⁸Presley, Fred, "The Economic Cycle, Its Application to Buying, Selling, Production, Investments," 1925, p. 27. See also *Weekly Letters*.

prices. Further, a rise in the "Harvard Index of the Volume of Manufacture" to a point between 112 and 120 per cent of normal offers additional evidence that the upswing in security prices has about spent its force.⁹

Forecasting bond prices.—Bond prices, we have already suggested, move through cycles in much the same way as stock prices, but they fluctuate much less drastically. Furthermore, bond prices move more generally in sympathy with short time interest rates than in sympathy with business prosperity or depression. The behavior of money rates, however, is such that at times in the business cycle bond and stock prices move together. For instance, a major forward movement in high grade bond prices generally starts early in phase one—depression—of the economic cycle and is preceded by declining security prices and business. It will be recalled that stocks begin to advance at this point also, or at least at some time during the period of depression. A major decline in bond prices develops at the end of phase two—recovery—of the cycle, although stock prices continue to advance at this point in sympathy with expanding business.

Relationship between interest rates and security prices, further discussion of.—It has been an accepted theory that money rates have a rather important bearing on both stock and bond prices, in that low interest rates and easy money conditions are supposed to stimulate stock speculation, in addition to causing the prices of bonds to rise. That is, when interest rates are so low that it pays speculators to borrow in order to carry dividend paying or nondividend paying stocks for current return, or in anticipation of a rise in price, or both, then stock prices advance. Conversely, high interest rates increase the charges involved in carrying stocks on margin account and hence discourage purchases for speculative account, with the result that stock prices are depressed. A recent attempt has been made to show statistically and logically that there is no necessary connection between stock prices and interest rates.¹⁰ These writers present a large amount of statistical data to show that fluctuations in stock prices cannot be gauged in any certain way by changes in interest rates, either as represented by call money rates or by time loans. In addi-

⁹ *Ibid.*

¹⁰ See Owens and Hardy, "Interest Rates and Stock Speculation," 1925.

tion to statistical proof of their contention, they discuss the logical basis for discarding the theory that consistent inverse correlation exists between stock prices and interest rates.¹¹

Although undoubtedly they are correct in showing that interest rates are not the governing factor in determining the future direction of stock prices, nevertheless, it is true that interest rates represent changes in the current supply of and demand for lendable funds, that is, the state of bank credit; and such changes are of major importance in theories of the business cycle. While advancing interest rates, *per se*, may not cause stock prices to decline, such an advance in rates during the periods of recovery and prosperity reflect the steady advance in business which culminates in periods of strain and crises. For this reason, there is little doubt that movements in interest rates may be advantageously used, among other statistical series, to forecast stock prices.¹²

There are numerous other services which attempt to assist the investor in judging the proper time at which to buy and to sell securities. It is impossible for us here to examine them all. Some attempt to forecast not only cyclical changes but minor movements as well, while others are devoted essentially to an analysis of individual securities.

Difficulties of economic forecasting.—It must be remembered that there are certain limitations to any basis of economic forecasting. In the field of economics, conditions are highly

¹¹ Owens and Hardy, "Interest Rates and Stock Speculation," 1925, Macmillan, New York. After discussing the logical aspects of the thesis maintained, the authors conclude (p. 133): "In summary we have examined both the statistical evidence and the theoretical foundations of the doctrine that stock prices are controlled by short time interest rates and call loan rates, and have found no support for the doctrine. We do not contend that there is no relationship between these markets, but we feel certain that interest rates are only one of many factors which determine the course of prices in the stock market."

"Purchases of speculative securities made in order to obtain a margin of profit between the dividend yield and the interest cost are of no importance whatever in determining the course of speculation. Aside from the possible influence of the popular belief in the theory we are reviewing, the only importance of changes in the money market is in their bearing on the cost of carrying on such speculative operations as may be entered into for other reasons. Interest is one of the costs which the speculator must carry just as commissions are a cost, and changes in interest rates affect speculation just as do changes in commission rates. Both are probably of negligible importance."

¹² For an excellent reply to the theories advanced by Owens and Hardy, see "Money Rates and Security Prices," by Warren M. Persons and Edwin Frickey, *Review of Economic Statistics*, Vol. 8, No. 1, pp. 29-46.

dynamic, with the result that deductions and conclusions must be based on a wide range of ever-changing factors. There is a vast difference between a science like chemistry or physics and economics. In the former, it is possible to perform experiments and to formulate laws with great accuracy, because all the factors of the situation can be controlled. Not so in the field of economics. No two economic situations are ever the same in all respects, with the result that economic forecasts based on what has happened in the past in an apparently similar situation may prove erroneous, for new and unconsidered factors are often present in the later situation. Forecasting devices, therefore, can best be used to supplement one's general knowledge of a given situation, the latter being based on a wide consideration of all the important economic factors present. In this way, judgment is based neither on a more or less rigid formula, nor on a general idea of the situation, but on a combination of both.

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